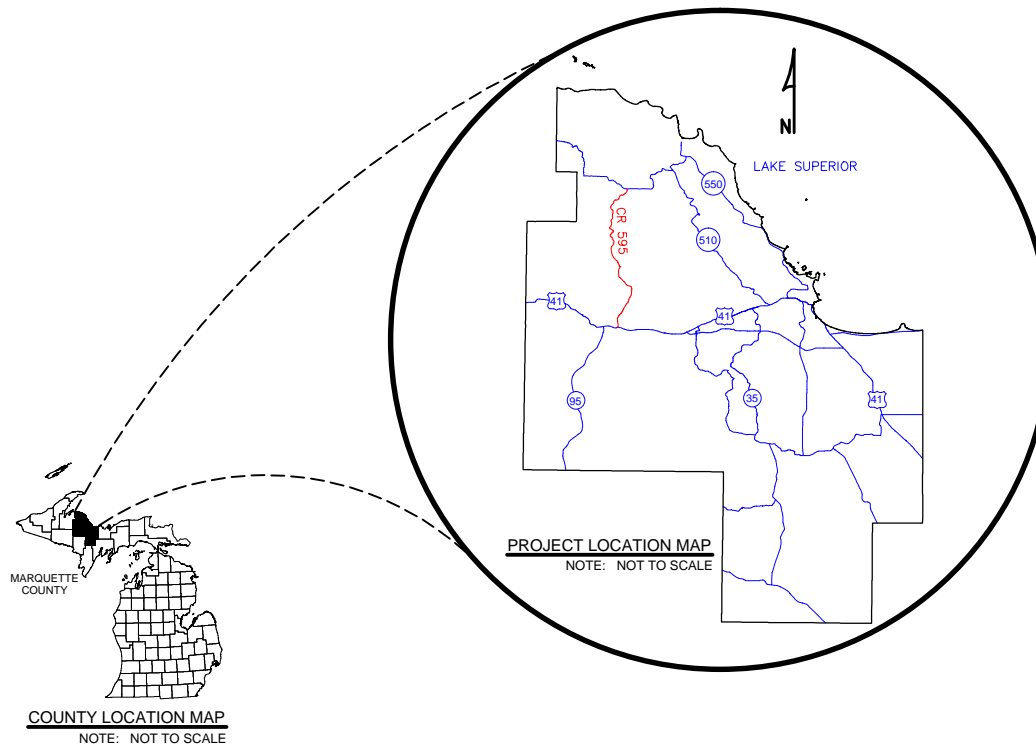


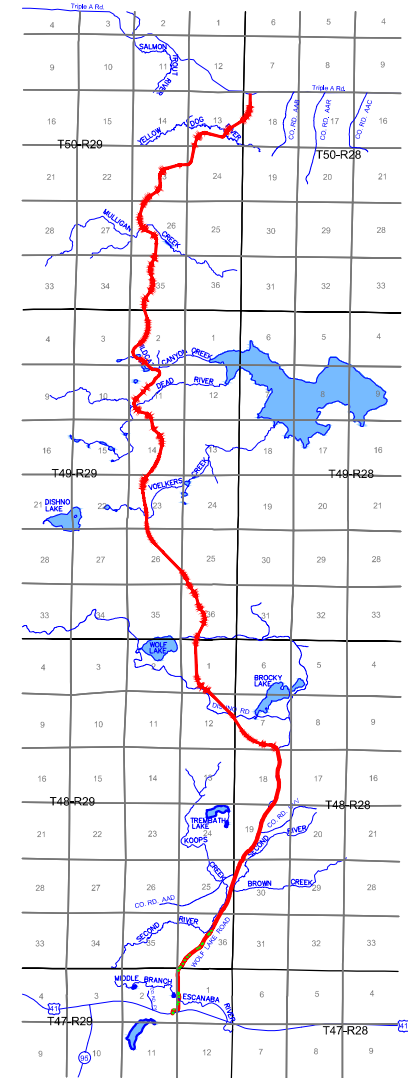
COUNTY ROAD 595 STREAM CROSSINGS

MARQUETTE COUNTY, MICHIGAN



REVISIONS THIS SET:

- SHEETS ADDED W1AS, W1AP, W1S, W1P, W2S, W2P, 17S AND 17P
- SHEETS OMITTED 2S, 2P, 3S, , 4S, 4P, 12S, AND 12P
- SHEETS REVISED A1, 1S, 1P, 1AS, 1AP, 5S, 6S, 6P, 7S, 7P, 8S, 8P, 9S, 9P, 10S, 10P, 11S, 11P, 13S, 13P, 14S, 14P, 15S, 15P, AND 16S



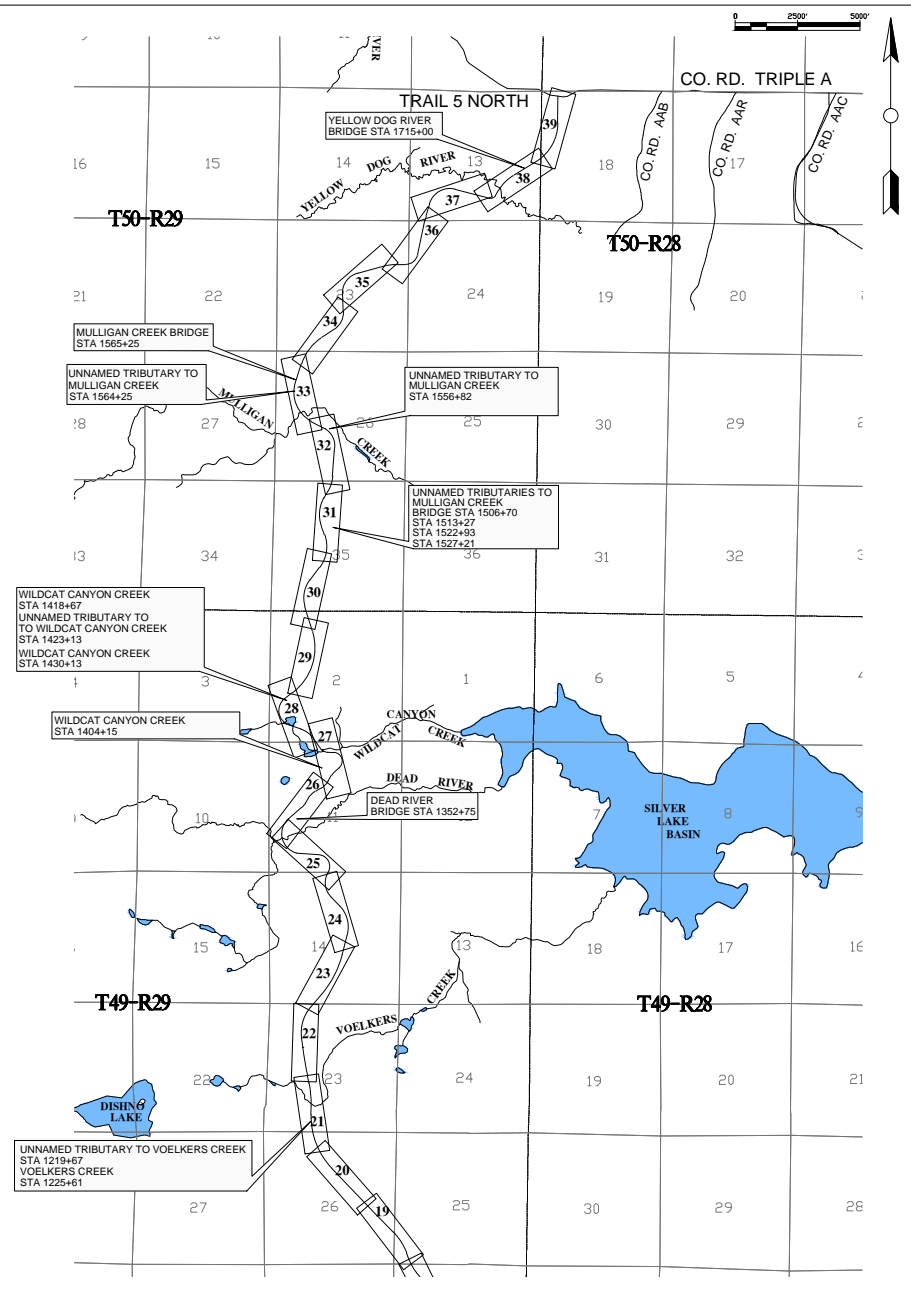
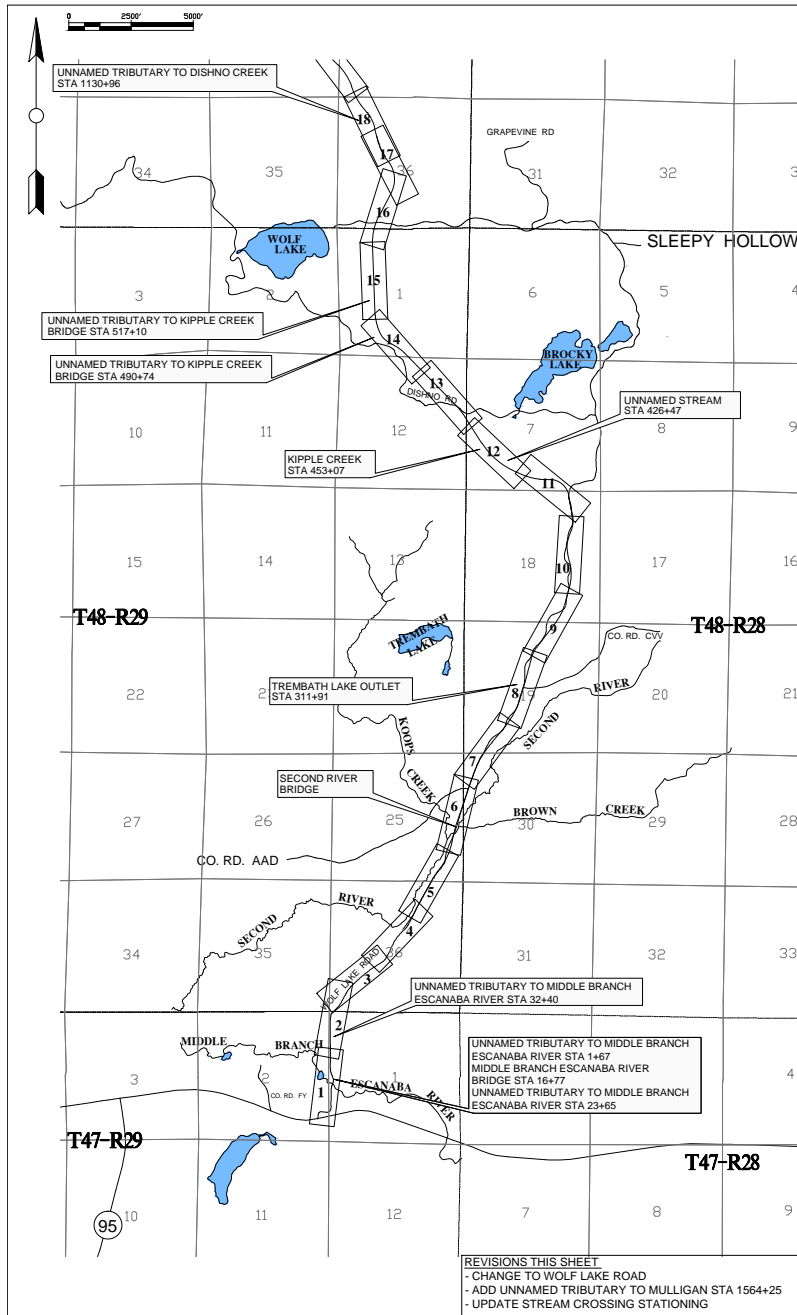
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 FIGURE COVERS
KIPPLE-WL

DATE:
9/14/12

A



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048















STREAM CROSSING INDEX
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595-STREAM
CROSSING INDEX

DATE:
7/23/12

A1

Stream Crossings Legend

-  Proposed Road (Plan)
-  Riprap Ditch Outfall
-  Proposed Culvert (Plan)
-  Proposed Culvert (See Section - Culvert Cross Section)
-  Final Grade (See Section - Culvert Cross Section)
-  Original Streambed Channel Centerline (Plan)
-  Original Ground / Streambed (See Section - Culvert Cross Section)
-  Delineated Wetland
-  Total Wetland Excavation Area
-  Total Wetland Fill Area
- 314+00 Station Data
- 1575 Datum Elevation, Michigan State Plane, North Zone Grid NAD 83, NAVD 88
-  Natural Bed Material
-  Slope Stake Line : Cut
-  Slope Stake Line : Fill
-  Proposed Guardrail

REVISIONS THIS SHEET
 - Datum Elevation Michigan State Plane, North Zone
 Grid NAD 83, NAVD 88



COLEMAN ENGINEERING COMPANY
 635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
 200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

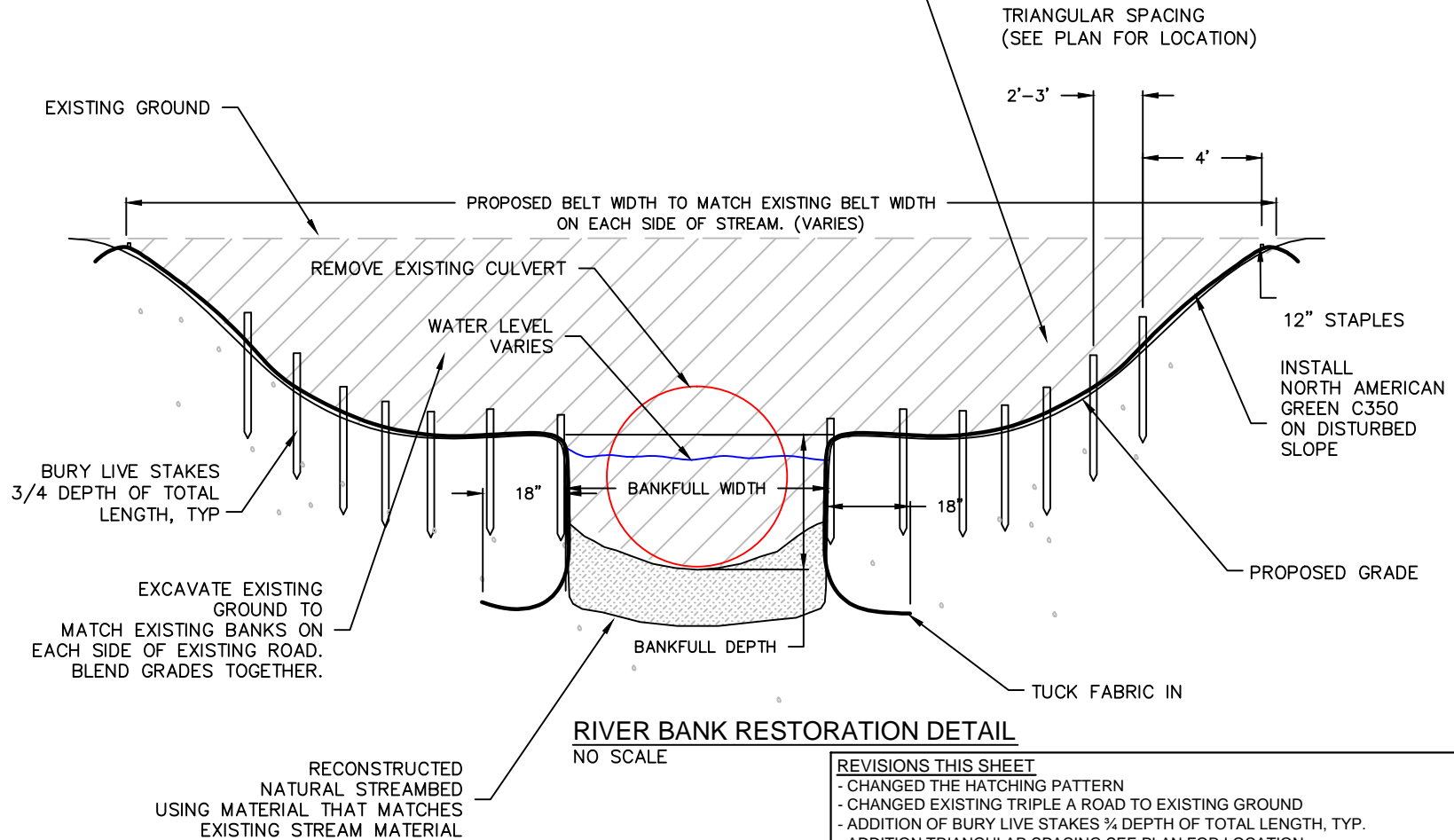
STREAM CROSSINGS LEGEND
 COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
 595 FIGURE COVERS
 KIPPLE-WL

DATE:
 6/25/12

B

LIVE STAKES COMPOSED OF AN EQUAL MIX OF SPECKLED ALDER, RED TWIG DOGWOOD, BEBB WILLOW, PETIO WILLOW, AND ELDERBERRY. CUT STRAIGHT BRANCHES WITH SAW OR MACHETE, TAKING CARE NOT TO DAMAGE BARK. TRIM SIDE BRANCHES LEAVING 2 TO 5 BUDS IN PLACE. SOAK PRE-HARVESTED STAKES FOR 24 HOURS BEFORE INSTALLING OR INSTALL SAME DAY STAKES ARE CUT. STAKES SHOULD BE 1" TO 2" DIAMETER, USE PILOT BAR TO PRE-DRILL HOLES AND TAMP SOIL TO FIRM. INSTALL LIVE STAKE THE FOLLOWING SPRING.



RIVER BANK RESTORATION DETAIL NO SCALE

REVISIONS THIS SHEET

- CHANGED THE HATCHING PATTERN
- CHANGED EXISTING TRIPLE A ROAD TO EXISTING GROUND
- ADDITION OF BURY LIVE STAKES 3/4 DEPTH OF TOTAL LENGTH, TYP.
- ADDITION TRIANGULAR SPACING SEE PLAN FOR LOCATION



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

DETAIL - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595-STREAM-SHEET
C

DATE:
6/25/12

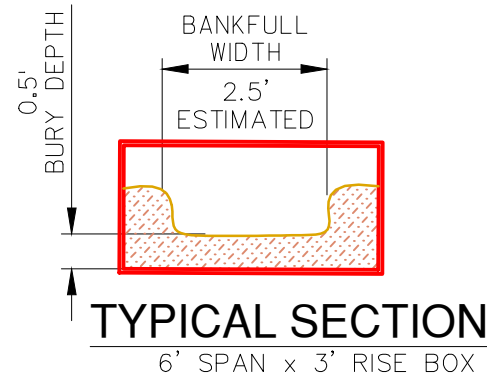
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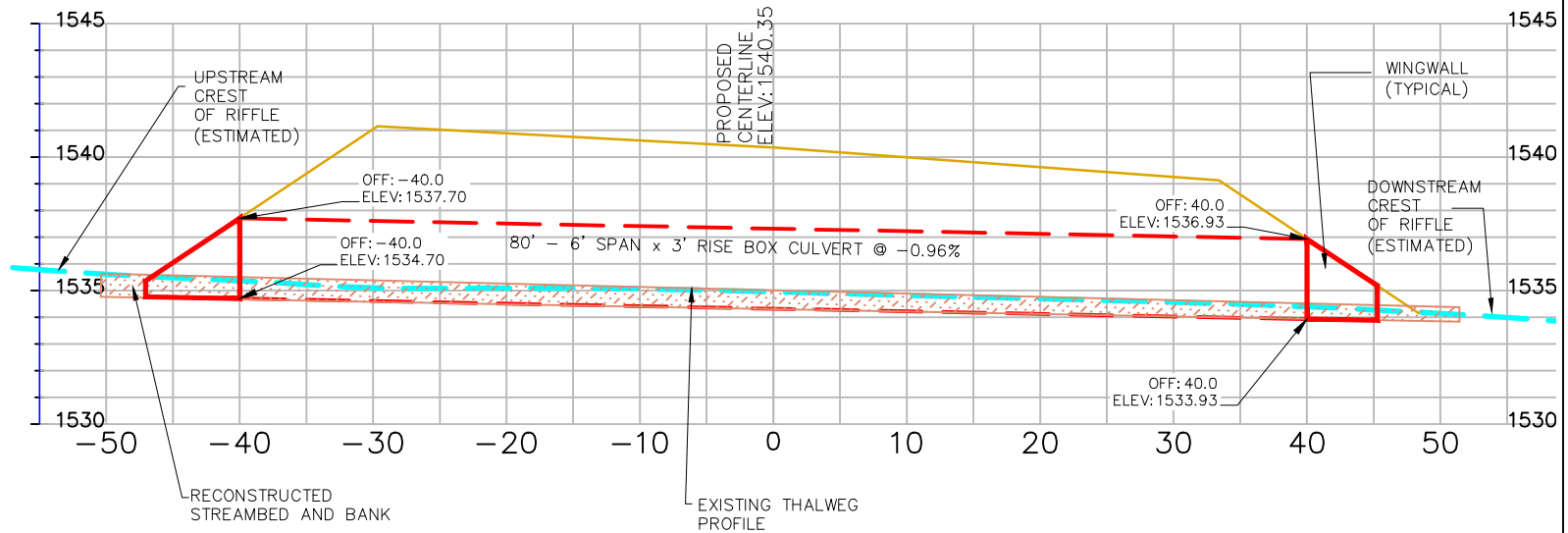
- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



**STREAM BOX CULVERT E1W
UNNAMED TRIBUTARY TO
MIDDLE BRANCH ESCANABA
RIVER
STA 1+67**



REVISIONS THIS SET:

- BOX CULVERT STREAM CROSSING REQUIRED WITH CHANGE TO WOLF LAKE ROAD

BANKFULL WIDTH = 2.5' ESTIMATED
STREAM SIMULATION SLOPE = 0.96% ESTIMATED
RIFFLE UPSTREAM = ESTIMATED
RIFFLE DOWNSTREAM = ESTIMATED



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1+67 UNNAMED TRIBUTARY TO MIDDLE BRANCH ESCANABA RIVER - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
SOUTH WOLF LAKE
ROAD-STREAMS

DATE:
7/11/12

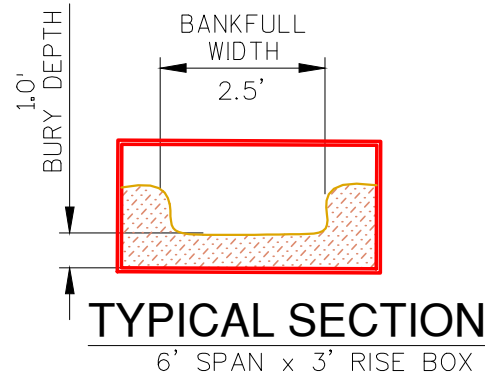
W1AS

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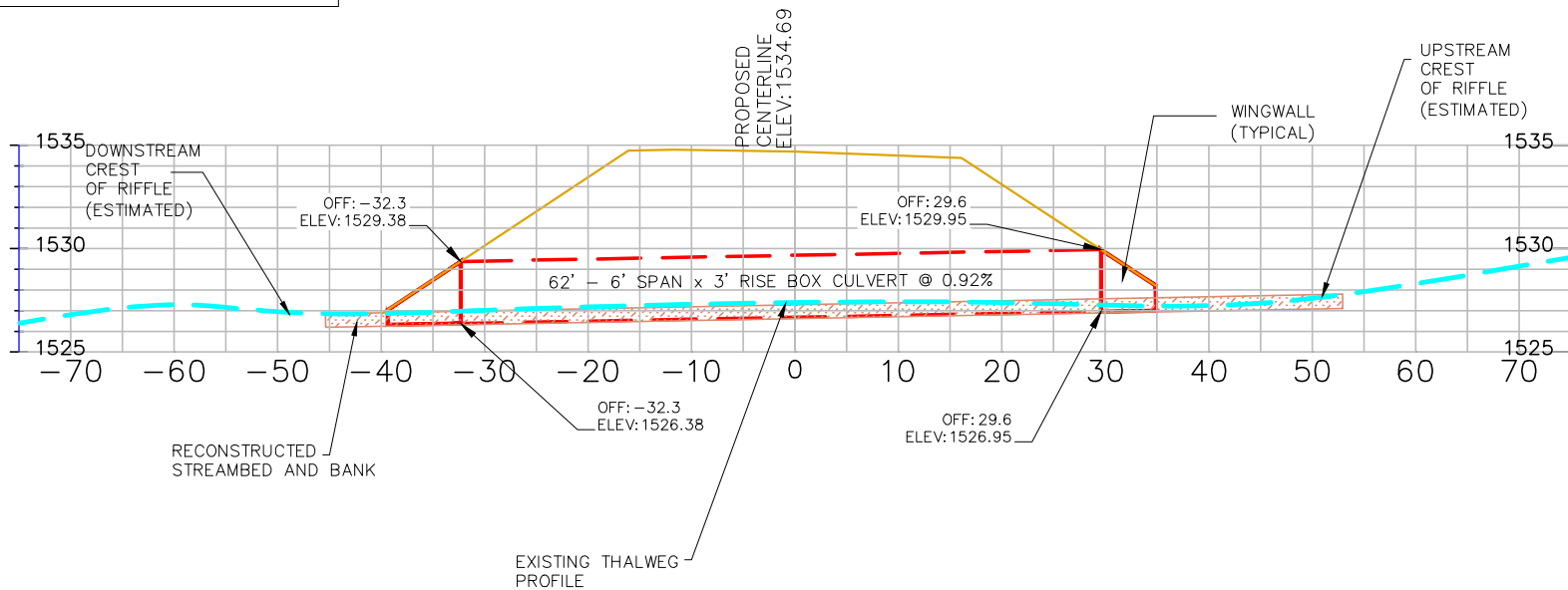
- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{6}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



**STREAM BOX CULVERT E4W
UNNAMED STREAM
STA 23+65**



REVISIONS THIS SET:

- BOX CULVERT STREAM CROSSING REQUIRED WITH CHANGE TO WOLF LAKE ROAD

BANKFULL WIDTH	=	2.5'
STREAM SIMULATION SLOPE	=	0.92%
RIFFLE UPSTREAM	=	ESTIMATED
RIFFLE DOWNSTREAM	=	ESTIMATED



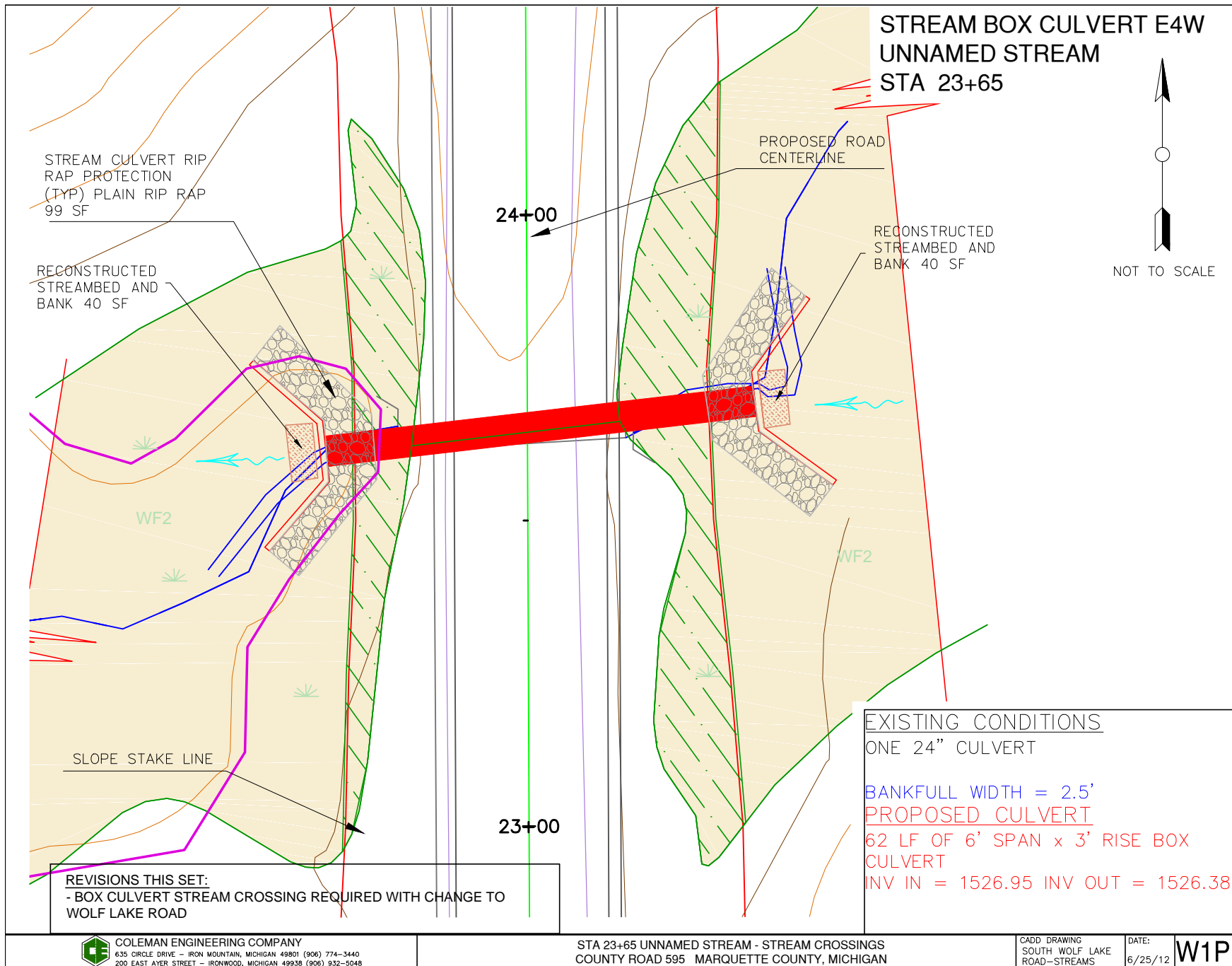
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 23+65 UNNAMED STREAM - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
SOUTH WOLF LAKE
ROAD-STREAMS

DATE:
6/25/12

W1S

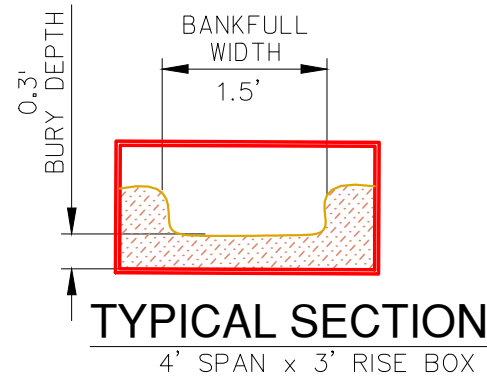


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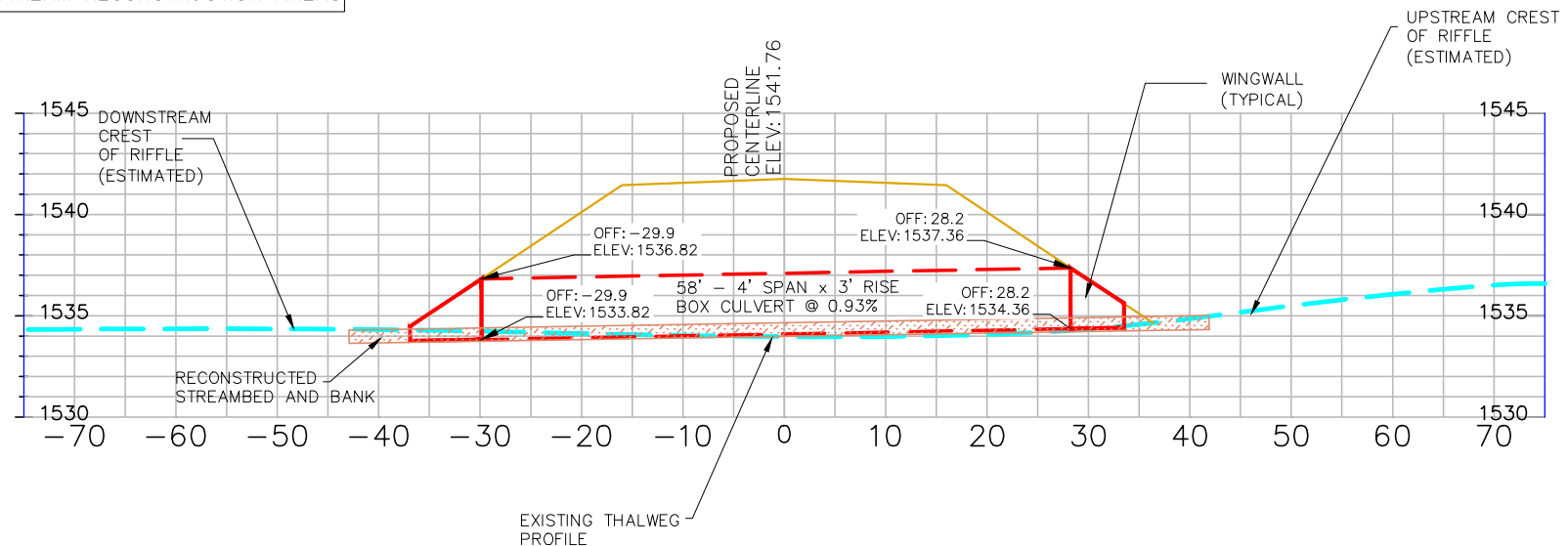
- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{6}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



**STREAM BOX CULVERT E5W
UNNAMED STREAM
STA 32+40**



REVISIONS THIS SET:

- BOX CULVERT STREAM CROSSING REQUIRED WITH CHANGE TO WOLF LAKE ROAD

BANKFULL WIDTH	=	1.5'
STREAM SIMULATION SLOPE	=	0.93%
RIFFLE UPSTREAM	=	ESTIMATED
RIFFLE DOWNSTREAM	=	ESTIMATED



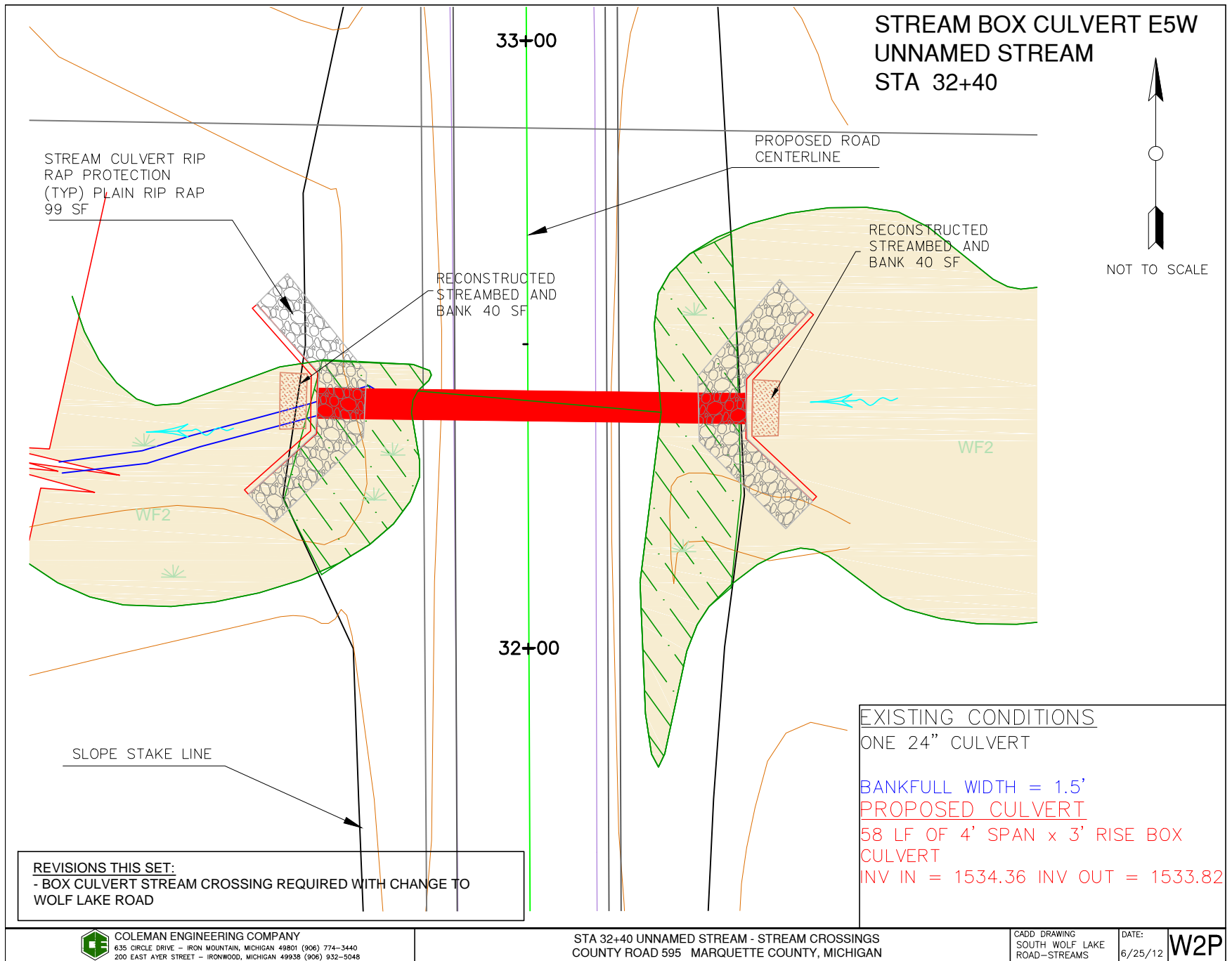
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 32+40 UNNAMED STREAM - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
SOUTH WOLF LAKE
ROAD-STREAMS

DATE:
6/25/12

W2S



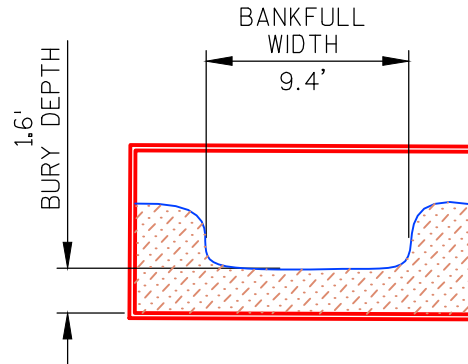
NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED AND BANK WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED AND BANK WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS

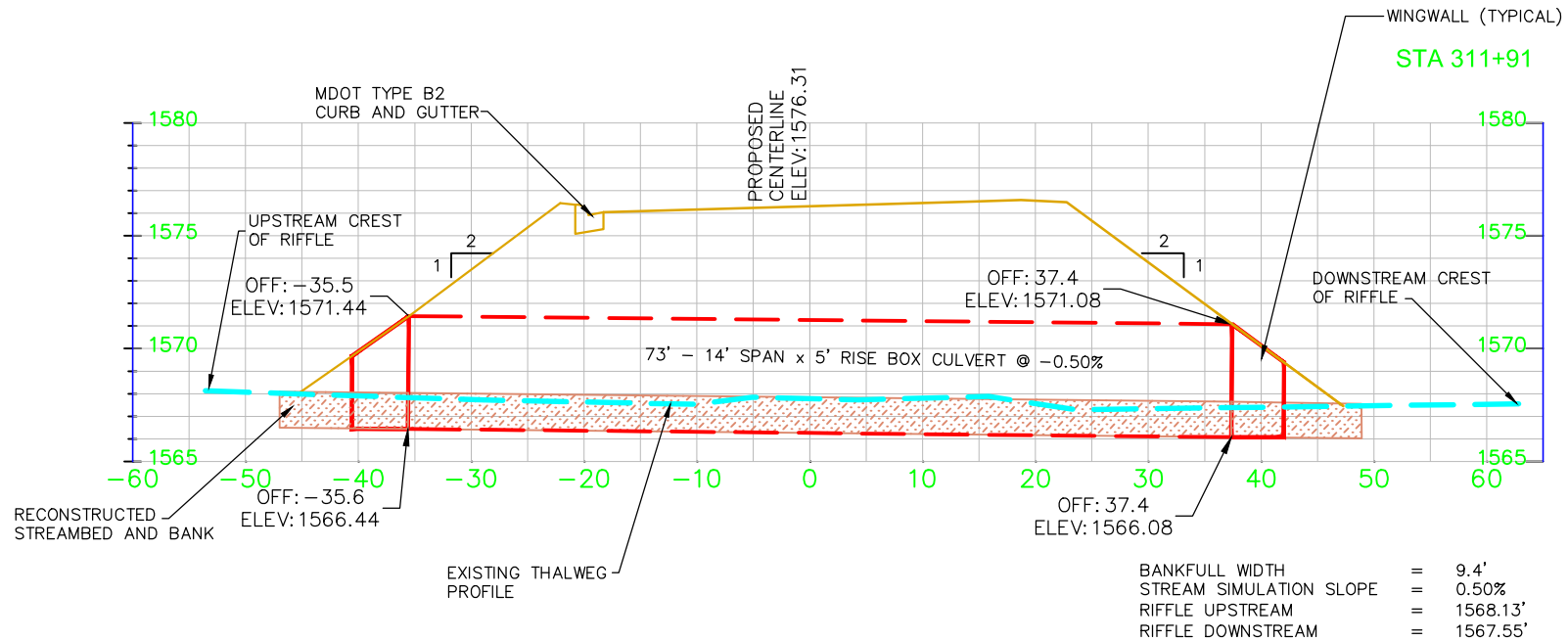
STREAM BOX CULVERT E6 TREMBATH LAKE OUTLET STA 311+91



TYPICAL SECTION
14' SPAN x 5' RISE BOX

REVISIONS THIS SHEET

- CHANGED E6 TREMBATH LAKE OUTLET FROM 12' X 5' BOX CULVERT TO A 14' X 5' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 311+91 TREMBATH LAKE OUTLET - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 STREAM
SECTIONS

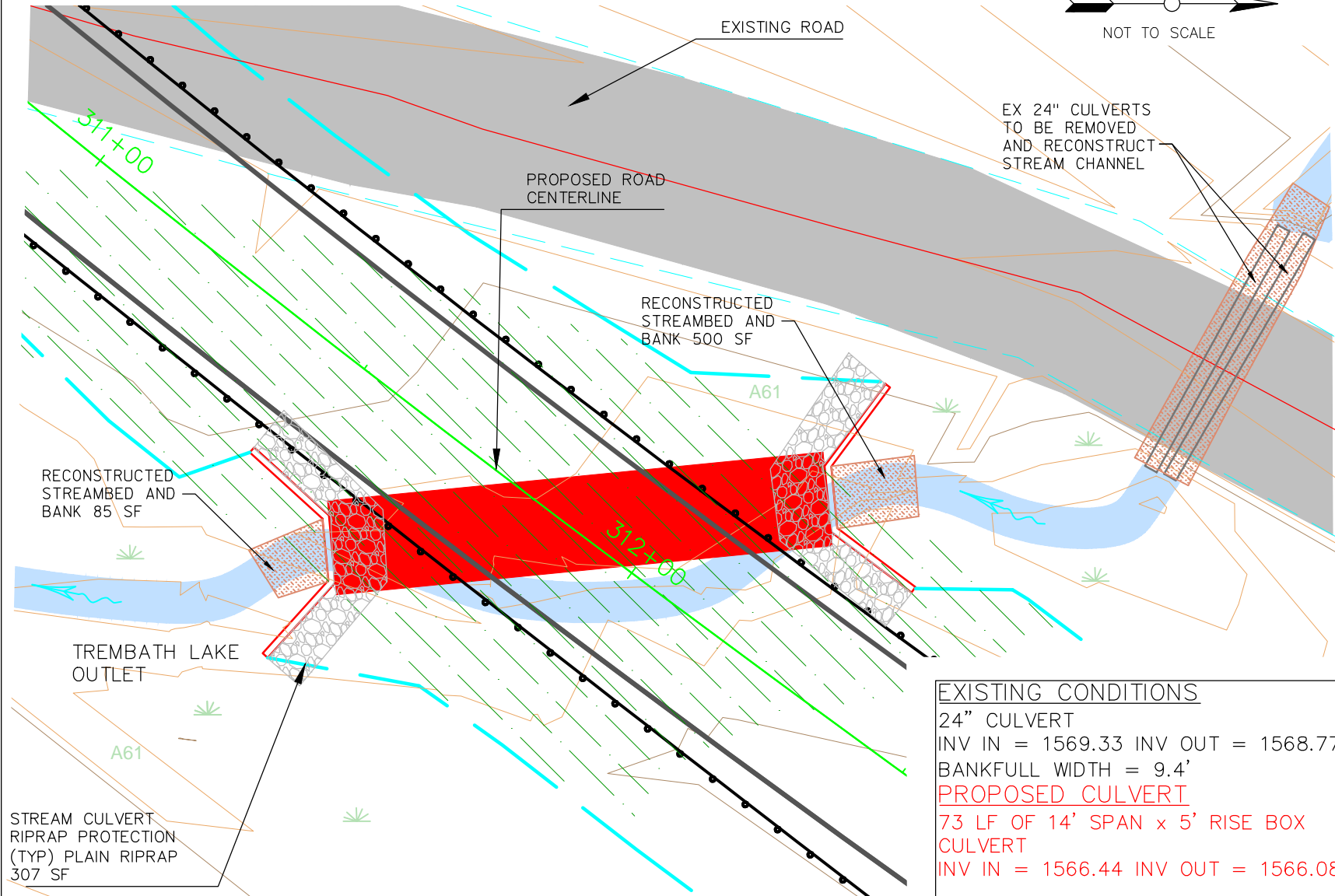
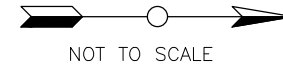
DATE:
6/25/12

1S

REVISIONS THIS SHEET

- CHANGED E6 TREMBATH LAKE OUTLET FROM 12'X 5' BOX CULVERT TO A 14' X 5' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- CHANGED RECONSTRUCTED STREAMBED LIMITS

STREAM BOX CULVERT E6 TREMBATH LAKE OUTLET STA 311+91



EXISTING CONDITIONS

24" CULVERT
INV IN = 1569.33 INV OUT = 1568.77
BANKFULL WIDTH = 9.4'

PROPOSED CULVERT

73 LF OF 14' SPAN x 5' RISE BOX CULVERT
INV IN = 1566.44 INV OUT = 1566.08



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635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 311+91 TREMBATH LAKE OUTLET - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 STREAM
SECTIONS

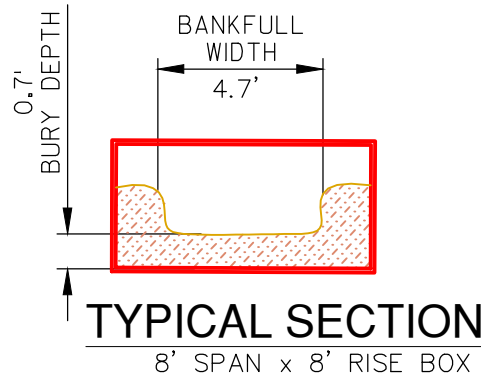
DATE:
6/25/12

1P

NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

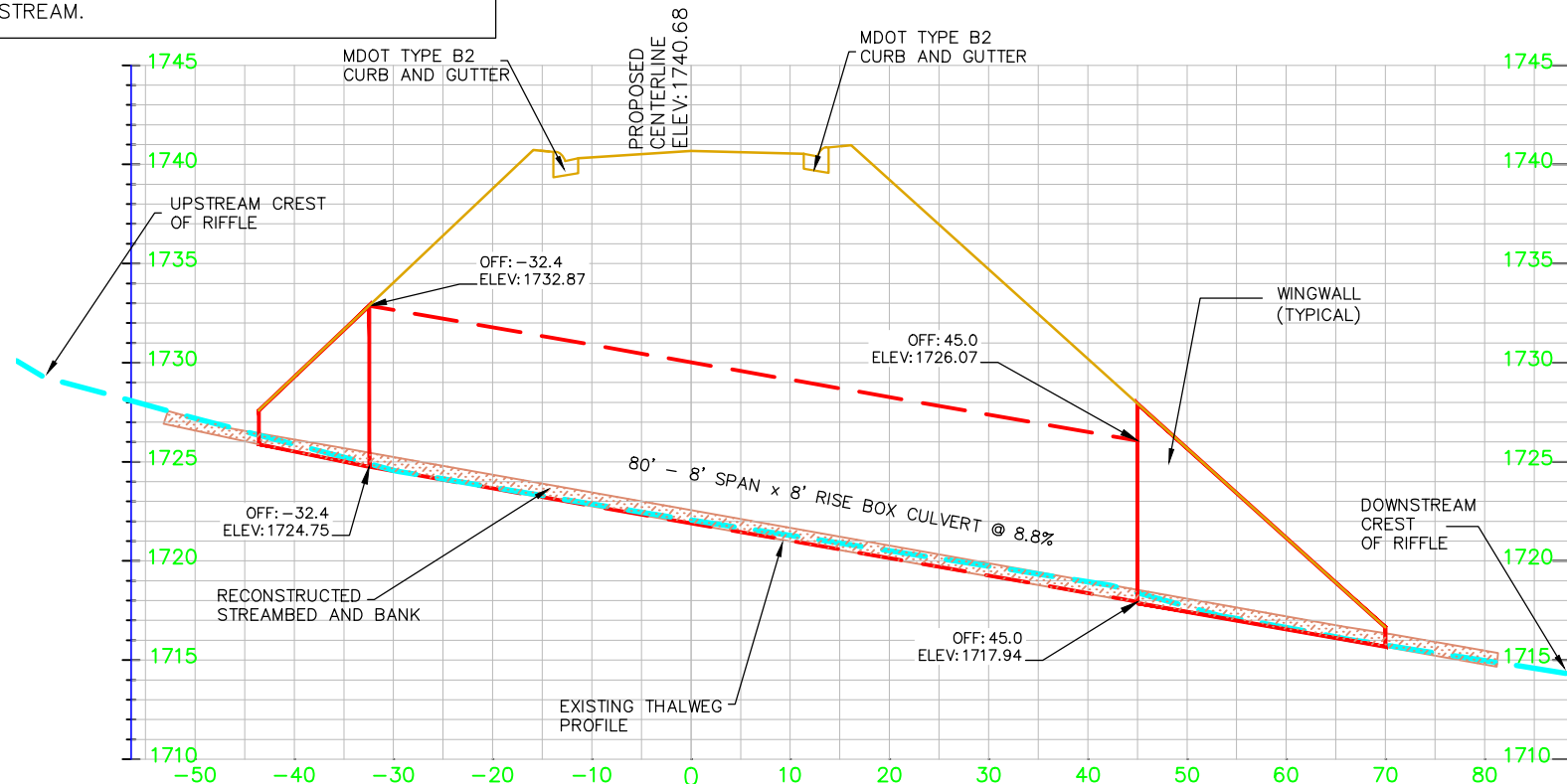
NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.



STREAM BOX CULVERT E99 UNNAMED STREAM STA 426+47

REVISIONS THIS SHEET

- ADDITION OF MDOT TYPE B2 CURB AND GUTTER
- CHANGED PROPOSED CENTERLINE ELEV: 1739.77 TO PROPOSED CENTERLINE ELEV: 1740.68
- STREAM BOX CULVERT D103 UNNAMED STREAM STA 3023+75 TO STREAM BOX CULVERT E99 UNNAMED STREAM STA 426+47
- CHANGED CULVERT E99 UNNAMED STREAM FROM 108' LONG 6X4 TO 80' LONG 8X8 BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE



NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS

BANKFULL WIDTH = 4.7'
STREAM SIMULATION SLOPE = 8.8%
RIFFLE UPSTREAM = 1723.75'
RIFFLE DOWNSTREAM = 1716.44'



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

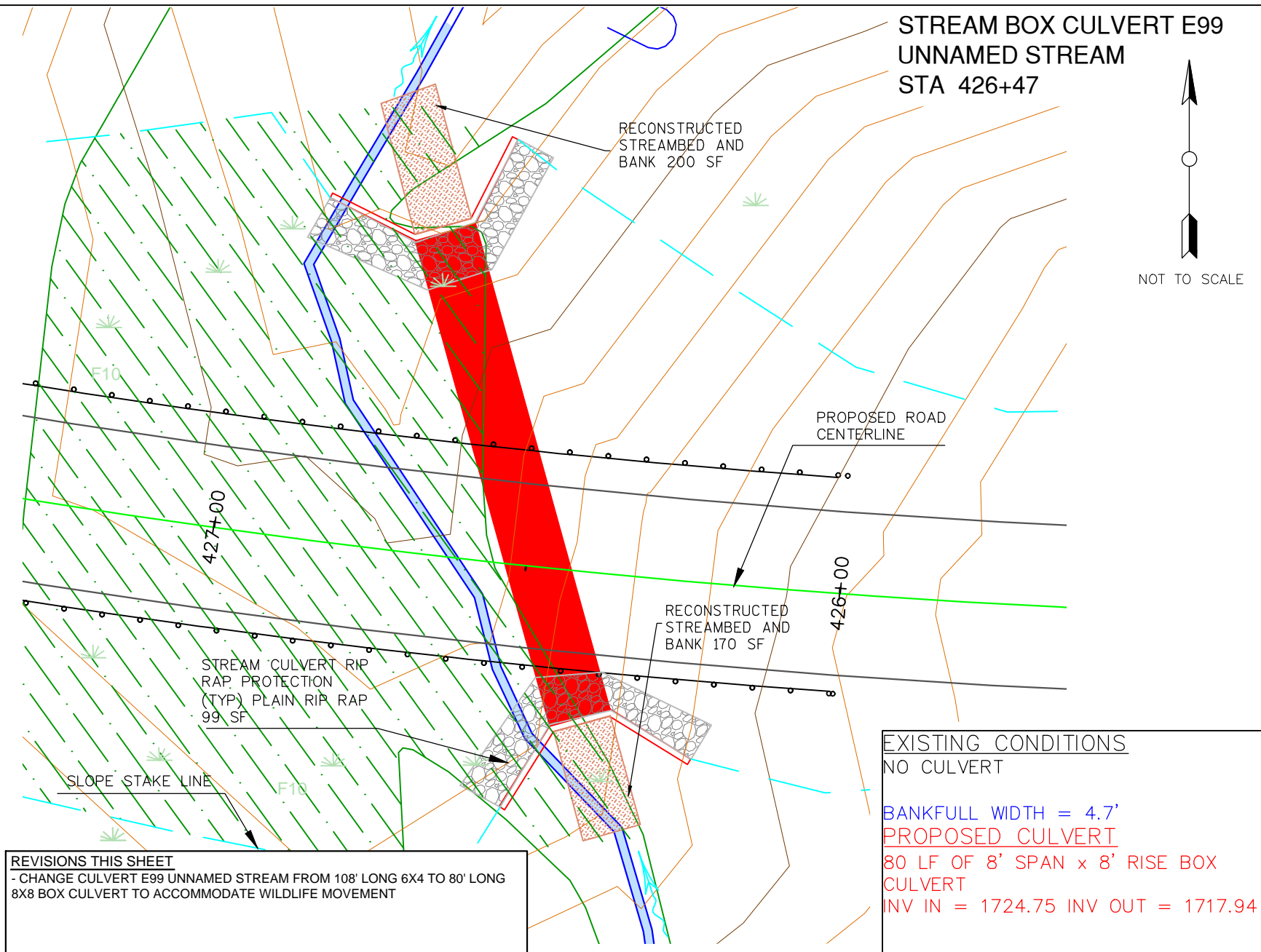
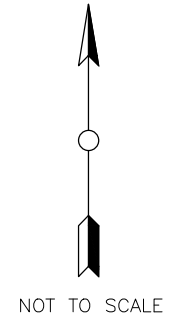
STA 426+47 UNNAMED STREAM - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
kipple_creek stream
crossings

DATE:
6/25/12

1AS

**STREAM BOX CULVERT E99
UNNAMED STREAM
STA 426+47**



REVISIONS THIS SHEET
 - CHANGE CULVERT E99 UNNAMED STREAM FROM 108' LONG 6X4 TO 80' LONG 8X8 BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT

EXISTING CONDITIONS
 NO CULVERT
 BANKFULL WIDTH = 4.7'
PROPOSED CULVERT
 80 LF OF 8' SPAN x 8' RISE BOX CULVERT
 INV IN = 1724.75 INV OUT = 1717.94



COLEMAN ENGINEERING COMPANY
 635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
 200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 426+47 UNNAMED STREAM - STREAM CROSSINGS
 COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

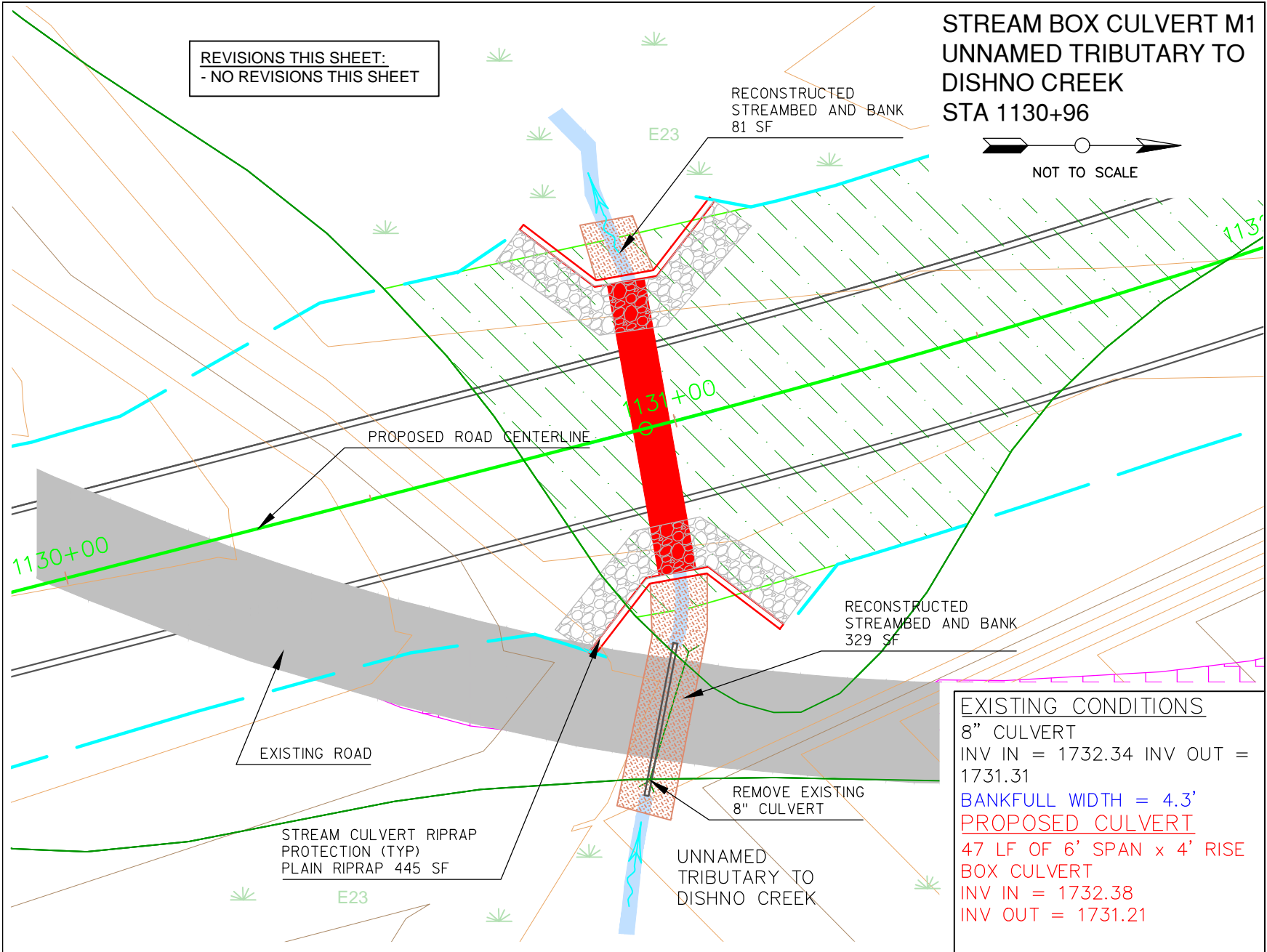
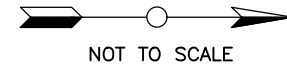
CADD DRAWING
 kipple creek stream crossings

DATE:
 8/25/12

1AP

REVISIONS THIS SHEET:
- NO REVISIONS THIS SHEET

STREAM BOX CULVERT M1
UNNAMED TRIBUTARY TO
DISHNO CREEK
STA 1130+96



EXISTING CONDITIONS

8" CULVERT
INV IN = 1732.34 INV OUT = 1731.31

BANKFULL WIDTH = 4.3'

PROPOSED CULVERT

47 LF OF 6' SPAN x 4' RISE
BOX CULVERT
INV IN = 1732.38
INV OUT = 1731.21



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1130+96 TRIBUTARY TO DISHNO CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

5P

NOTES:

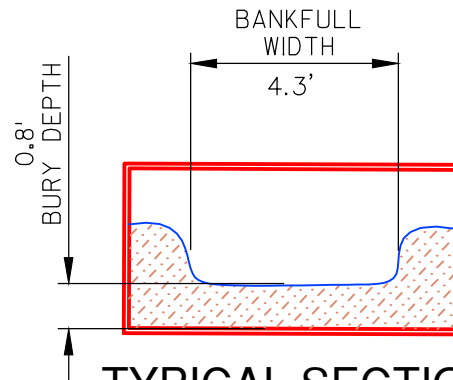
- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

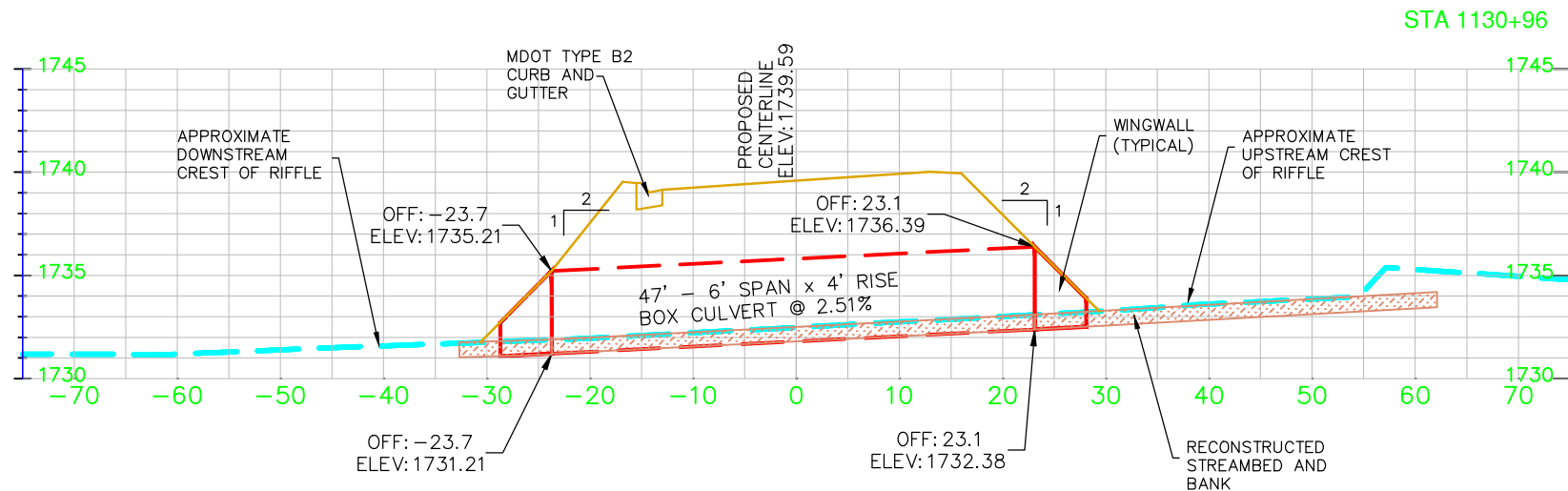
NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS

STREAM BOX CULVERT M1
UNNAMED TRIBUTARY TO
DISHNO CREEK
STA 1130+96

REVISIONS THIS SHEET:
- ADD MAINTAINING BANKFULL WIDTH
NOTE



TYPICAL SECTION
6' SPAN x 4' RISE BOX



BANKFULL WIDTH = 4.3'
STREAM SIMULATION SLOPE = 2.5% ESTIMATED
RIFFLE UPSTREAM = 1733.56 ESTIMATED
RIFFLE DOWNSTREAM = 1731.57 ESTIMATED



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
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STA 1130+96 TRIBUTARY TO DISHNO CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

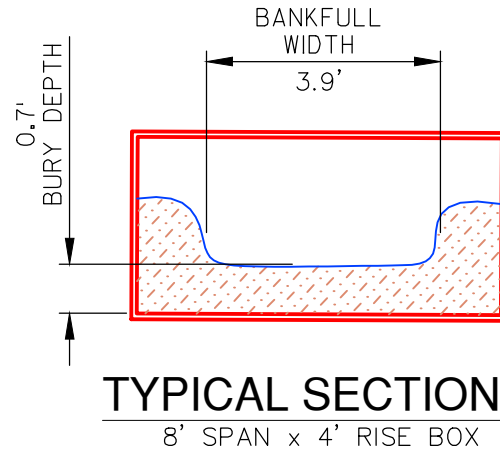
5S

NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

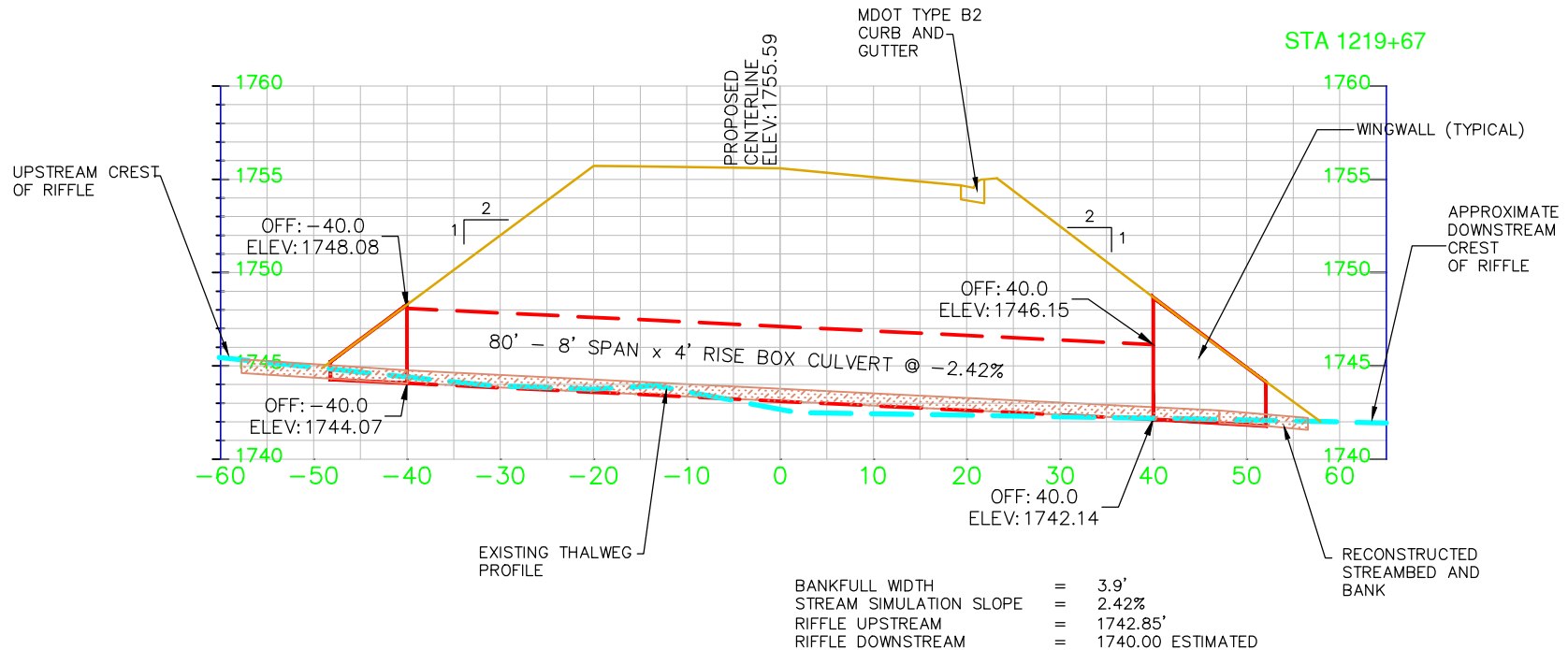
NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



STREAM BOX CULVERT D28 UNNAMED TRIBUTARY TO VOELKERS CREEK STA 1219+67

REVISIONS THIS SHEET:

- CHANGE CULVERT D28 UNNAMED TRIBUTARY TO VOELKERS CREEK FROM A 97' LONG 6X4 BOX CULVERT TO A 80' LONG 8X4 BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT



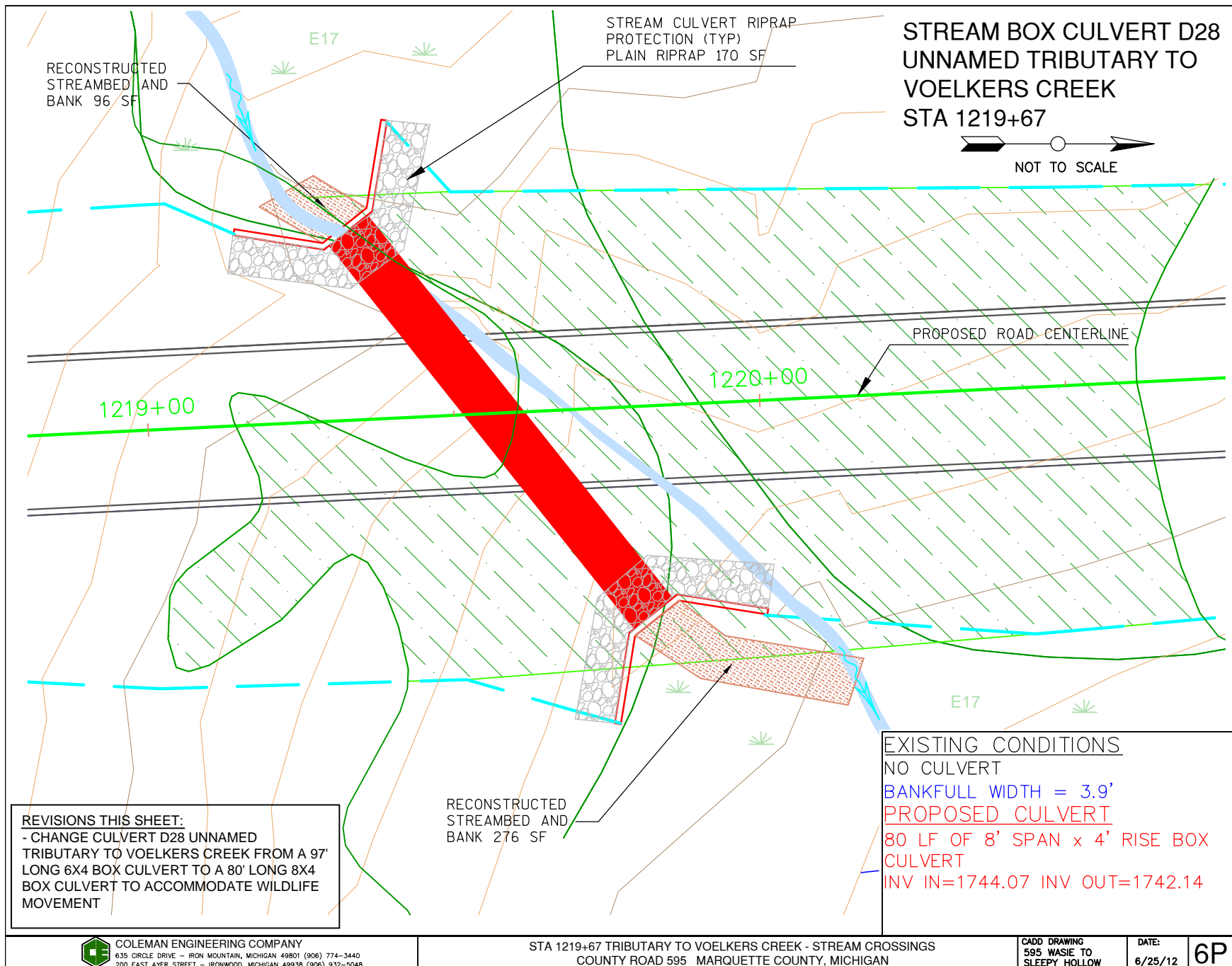
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1219+67 TRIBUTARY TO VOELKERS CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

6S

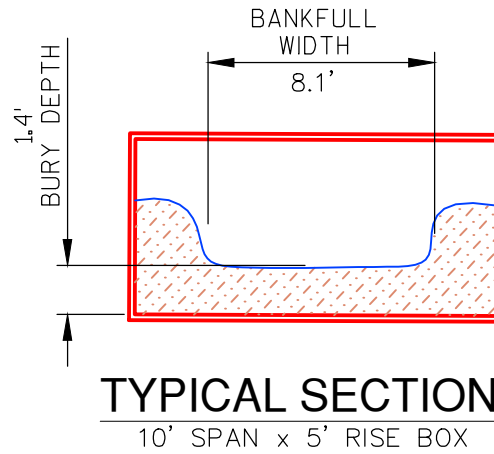


NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{6}$ BANKFULL WIDTH UP TO 2' MAX.

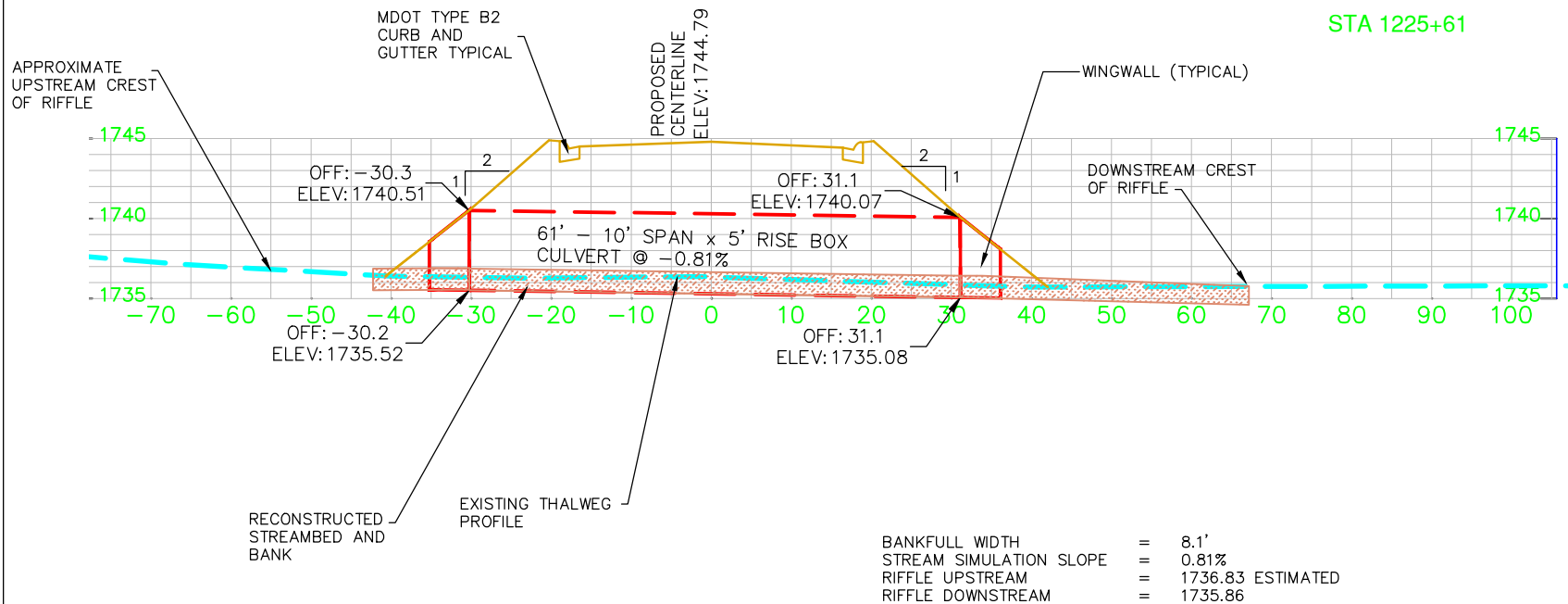
NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



**STREAM BOX CULVERT D29
VOELKERS CREEK
STA 1225+61**

REVISIONS THIS SHEET:
- ADD MAINTAINING BANKFULL WIDTH
NOTE



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1225+61 VOELKERS CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

7S

NOT TO SCALE

RECONSTRUCTED
STREAMBED AND
BANK 70 SF

STREAM CULVERT RIPRAP
PROTECTION (TYP)
PLAIN RIPRAP 867 SF

~~1225 + 00~~~~1226+00~~

PROPOSED ROAD CENTERLINE

REMOVE EXISTING CULVERT

EXISTING ROAD

48" CULVERT
INV IN = 1736.83 INV OUT = 1736.83
BANKFULL WIDTH = 8.1'
PROPOSED CULVERT
61 LF OF 10' SPAN x 5' RISE BOX
CULVERT
INV IN = 1735.52 INV OUT = 1735.08



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
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STA 1225+61 VOELKERS CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING 595 WASIE TO SLEEPY HOLLOW

DATE:
6/25/12

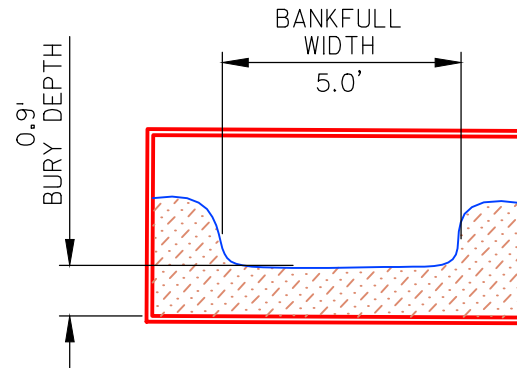
7P

NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS

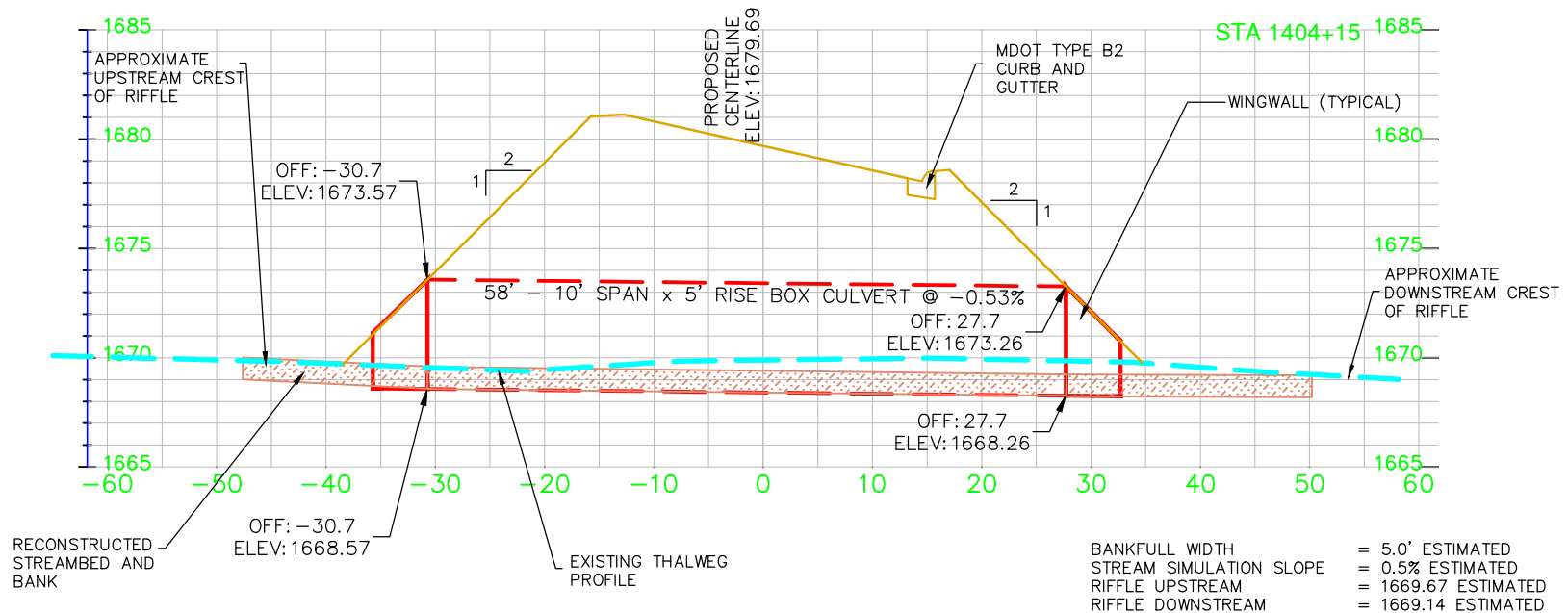


TYPICAL SECTION
10' SPAN x 5' RISE BOX

**STREAM BOX CULVERT D44
WILDCAT CANYON CREEK
STA 1404+15**

REVISIONS THIS SHEET:

- CHANGED CULVERT D44 WILDCAT CANYON CREEK FROM A 7'X 5' BOX CULVERT TO A 10'X 5' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE
- REMOVED EXISTING CULVERT TO BE REMOVED NOTE
- REMOVED PASSING LANE



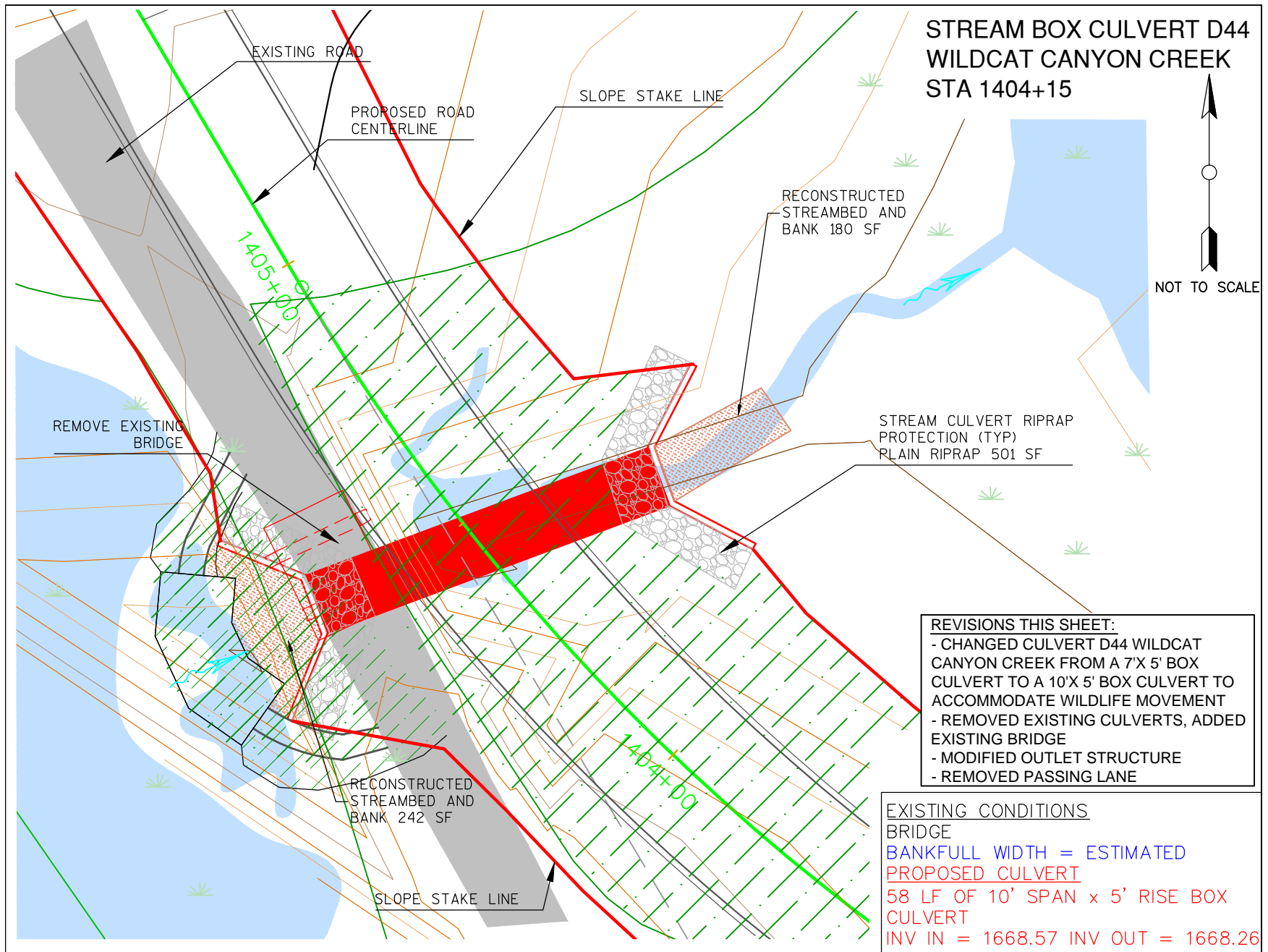
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1404+15 WILDCAT CANYON CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

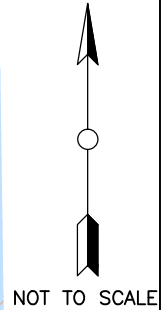
CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
9/14/12

8S



**STREAM BOX CULVERT D44
WILDCAT CANYON CREEK
STA 1404+15**



- REVISIONS THIS SHEET:**
- CHANGED CULVERT D44 WILDCAT CANYON CREEK FROM A 7'X 5' BOX CULVERT TO A 10'X 5' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
 - REMOVED EXISTING CULVERTS, ADDED EXISTING BRIDGE
 - MODIFIED OUTLET STRUCTURE
 - REMOVED PASSING LANE

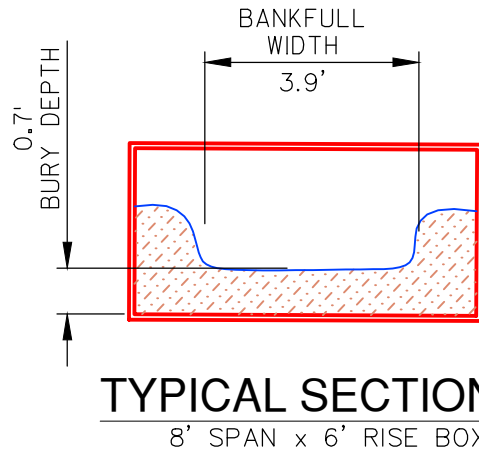
EXISTING CONDITIONS
BRIDGE
BANKFULL WIDTH = ESTIMATED
PROPOSED CULVERT
58 LF OF 10' SPAN x 5' RISE BOX CULVERT
INV IN = 1668.57 INV OUT = 1668.26

NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

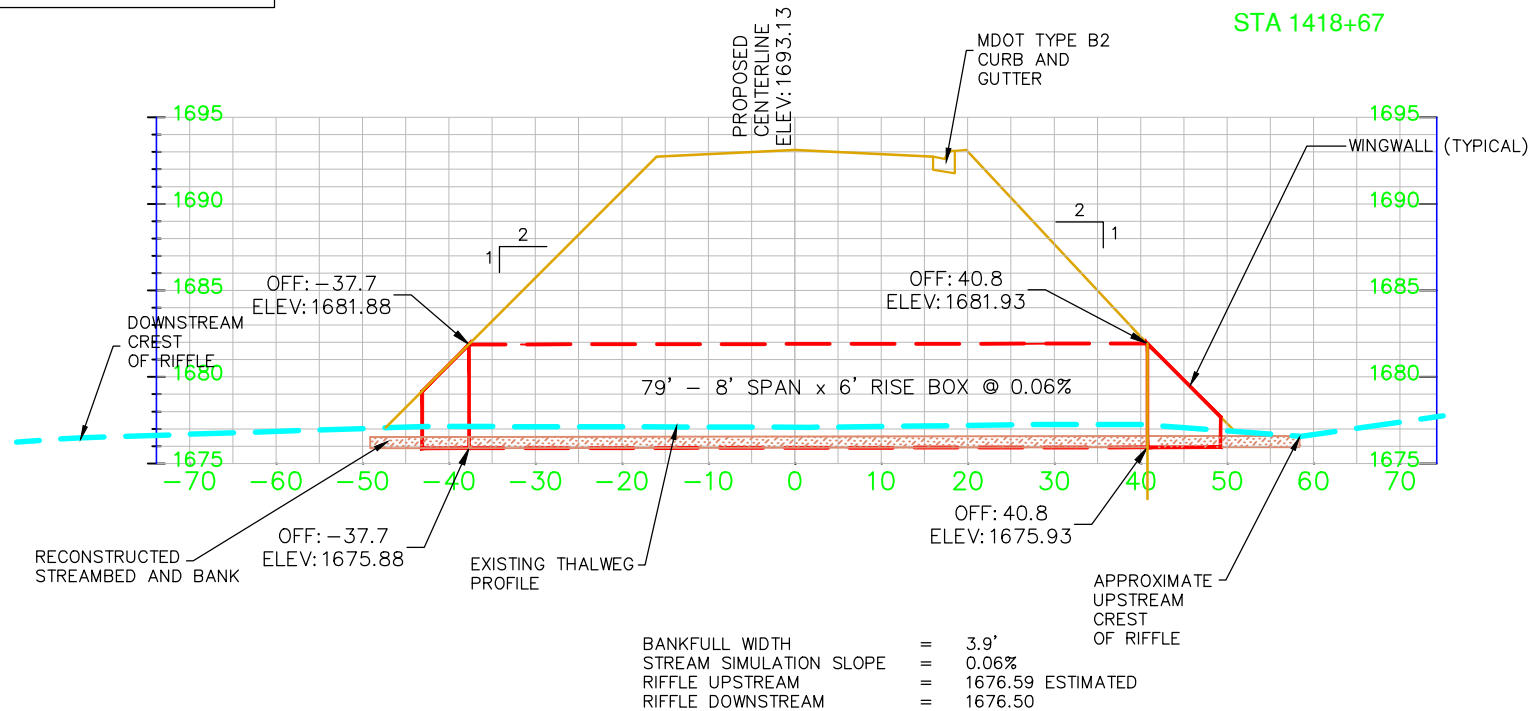
NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



**STREAM BOX CULVERT D46
WILDCAT CANYON CREEK
STA 1418+67**

REVISIONS THIS SHEET:

- CHANGED CULVERT D46 WILDCAT CANYON CREEK FROM A 87' LONG 6'X6' BOX CULVERT TO A 80' LONG 8'X6' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE
- REMOVED PASSING LANE



COLEMAN ENGINEERING COMPANY
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200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

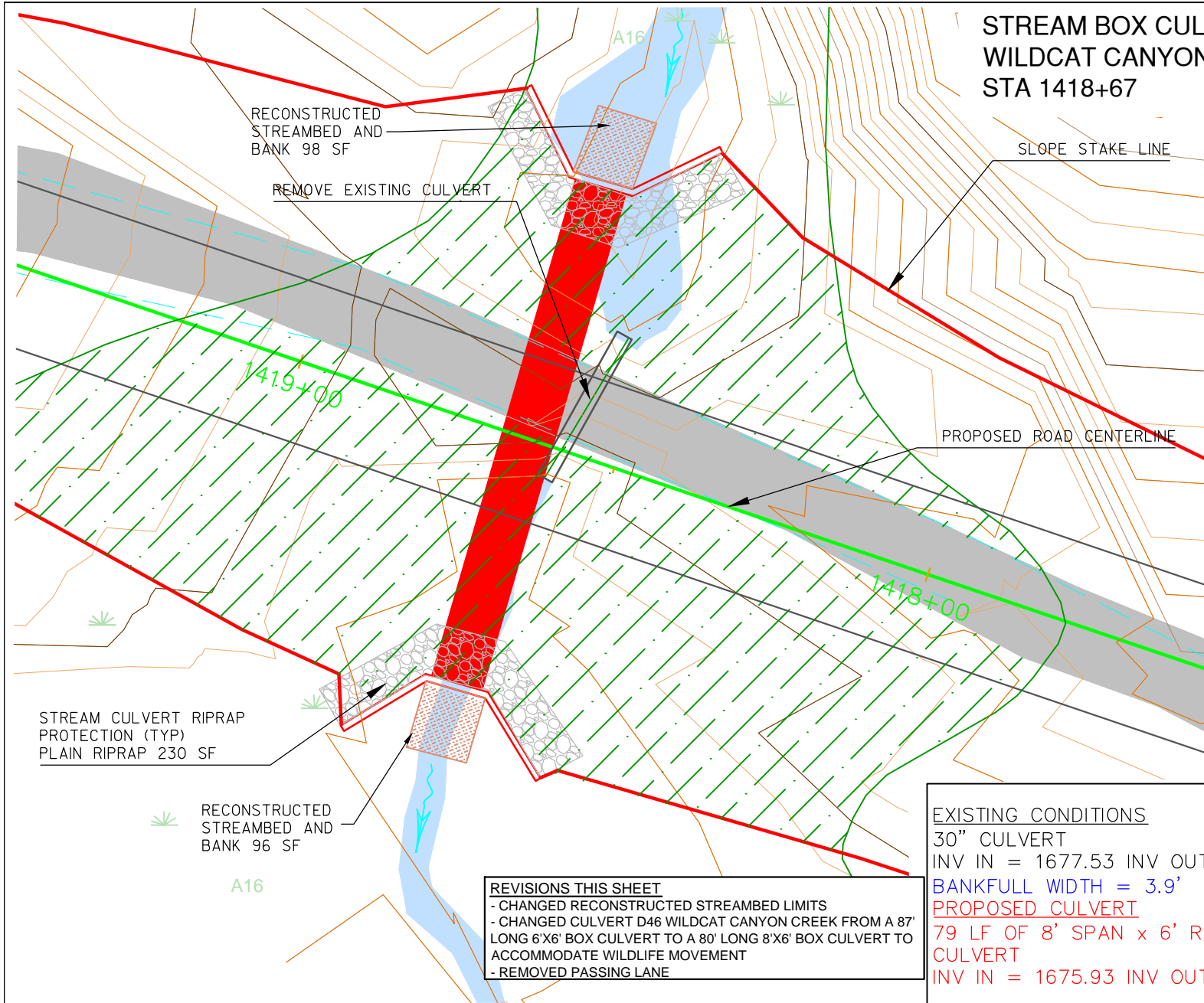
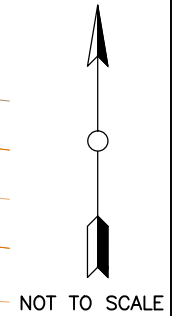
STA 1418+67 WILDCAT CANYON CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
9/14/12

9S

**STREAM BOX CULVERT D46
WILDCAT CANYON CREEK
STA 1418+67**



REVISIONS THIS SHEET

- CHANGED RECONSTRUCTED STREAMBED LIMITS
- CHANGED CULVERT D46 WILDCAT CANYON CREEK FROM A 87' LONG 6'X6' BOX CULVERT TO A 80' LONG 8'X6' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- REMOVED PASSING LANE

EXISTING CONDITIONS

30" CULVERT
INV IN = 1677.53 INV OUT = 1677.08

BANKFULL WIDTH = 3.9'

PROPOSED CULVERT

79 LF OF 8' SPAN x 6' RISE BOX
CULVERT

INV IN = 1675.93 INV OUT = 1675.88



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1418+67 WILDCAT CANYON CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
9/14/12

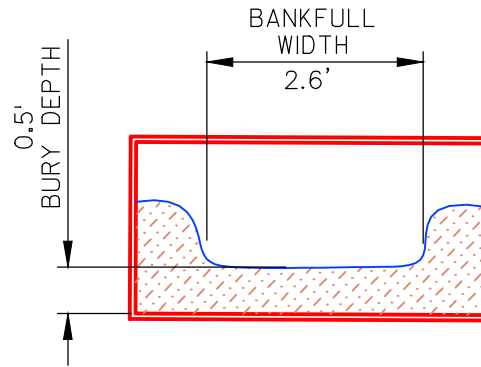
9P

NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS

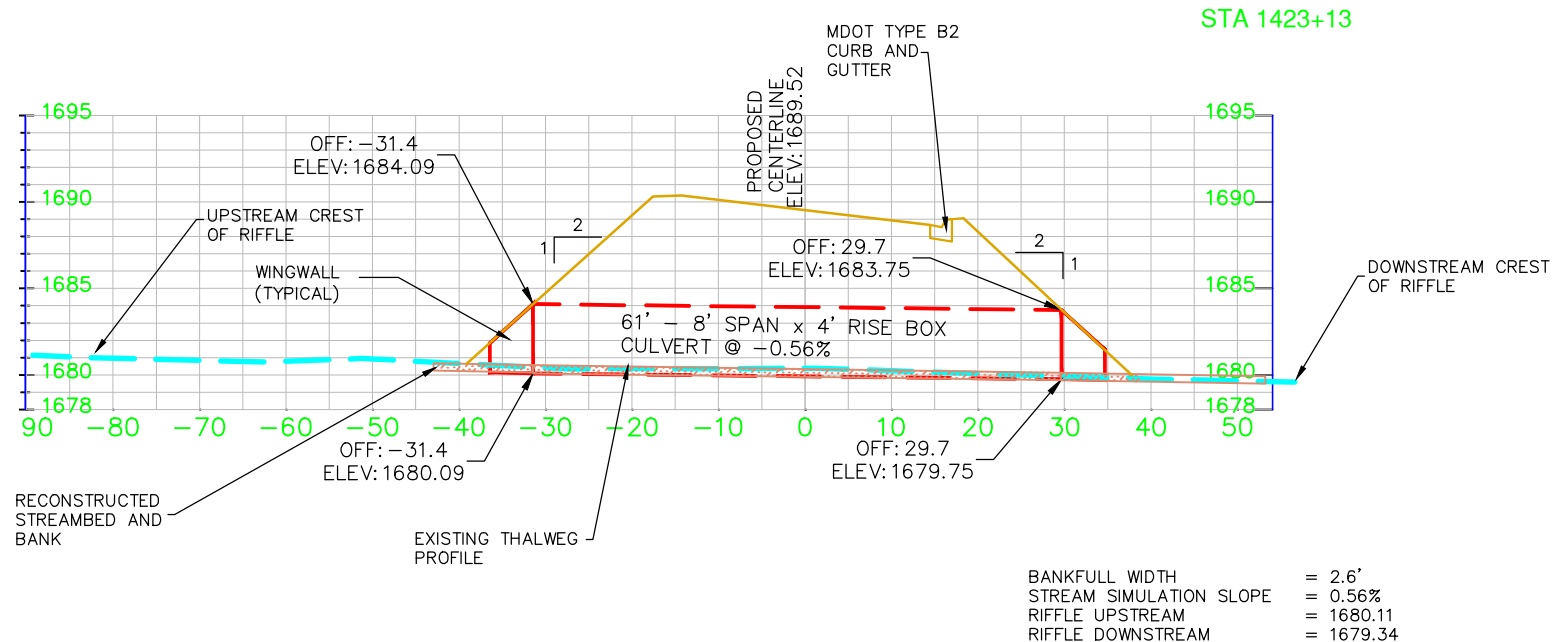


TYPICAL SECTION
8' SPAN x 4' RISE BOX

**STREAM BOX CULVERT D47
UNNAMED TRIBUTARY TO
WILDCAT CANYON CREEK
STA 1423+13**

REVISIONS THIS SHEET:

- CHANGED CULVERT D47 WILDCAT CANYON CREEK FROM A 6'X4' BOX CULVERT TO A 8'X4' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE
- REMOVED PASSING LANE



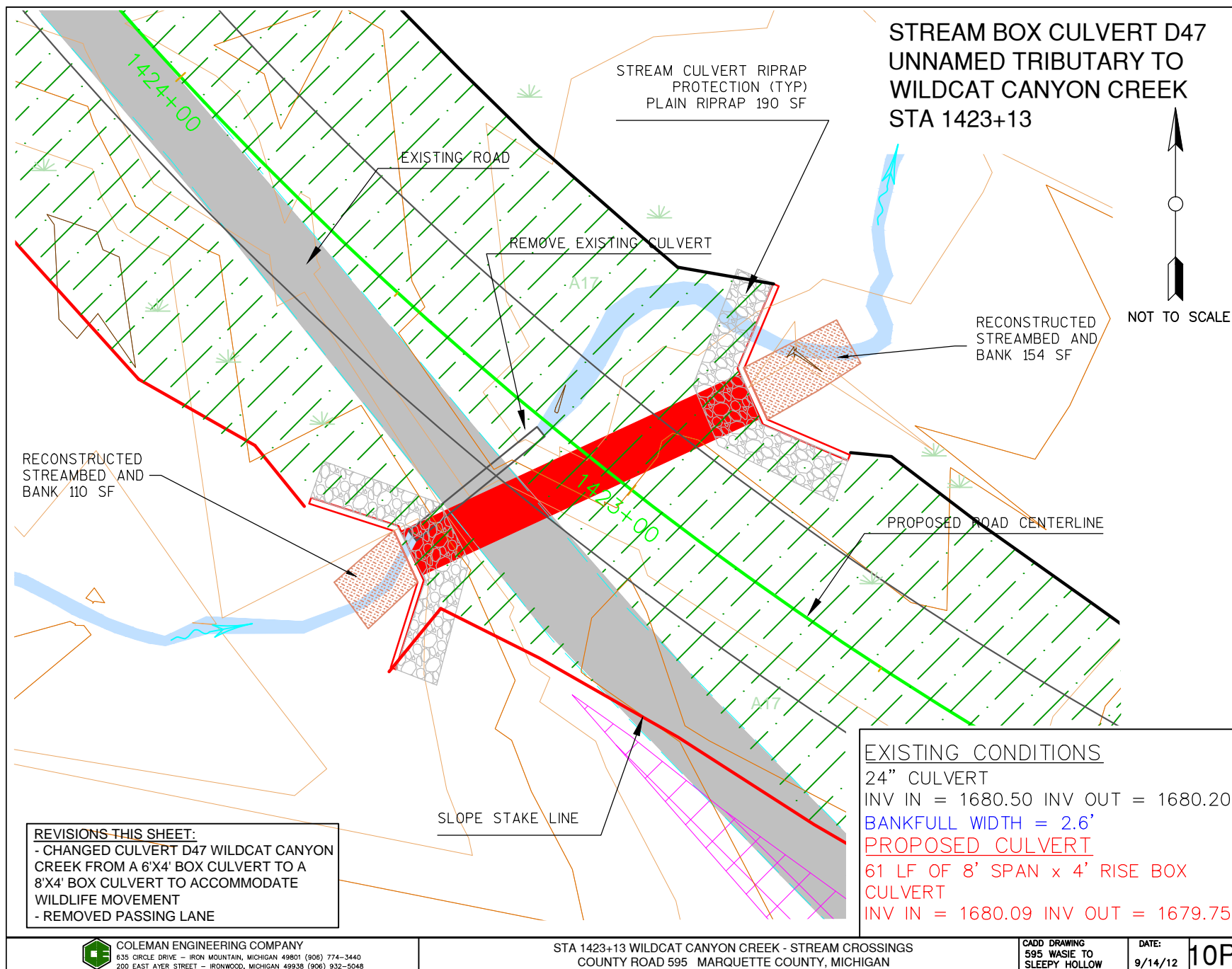
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1423+13 WILDCAT CANYON CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

10S

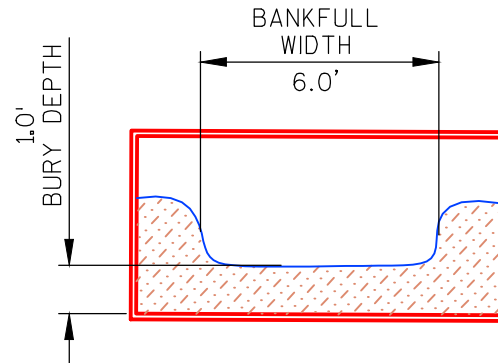


NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

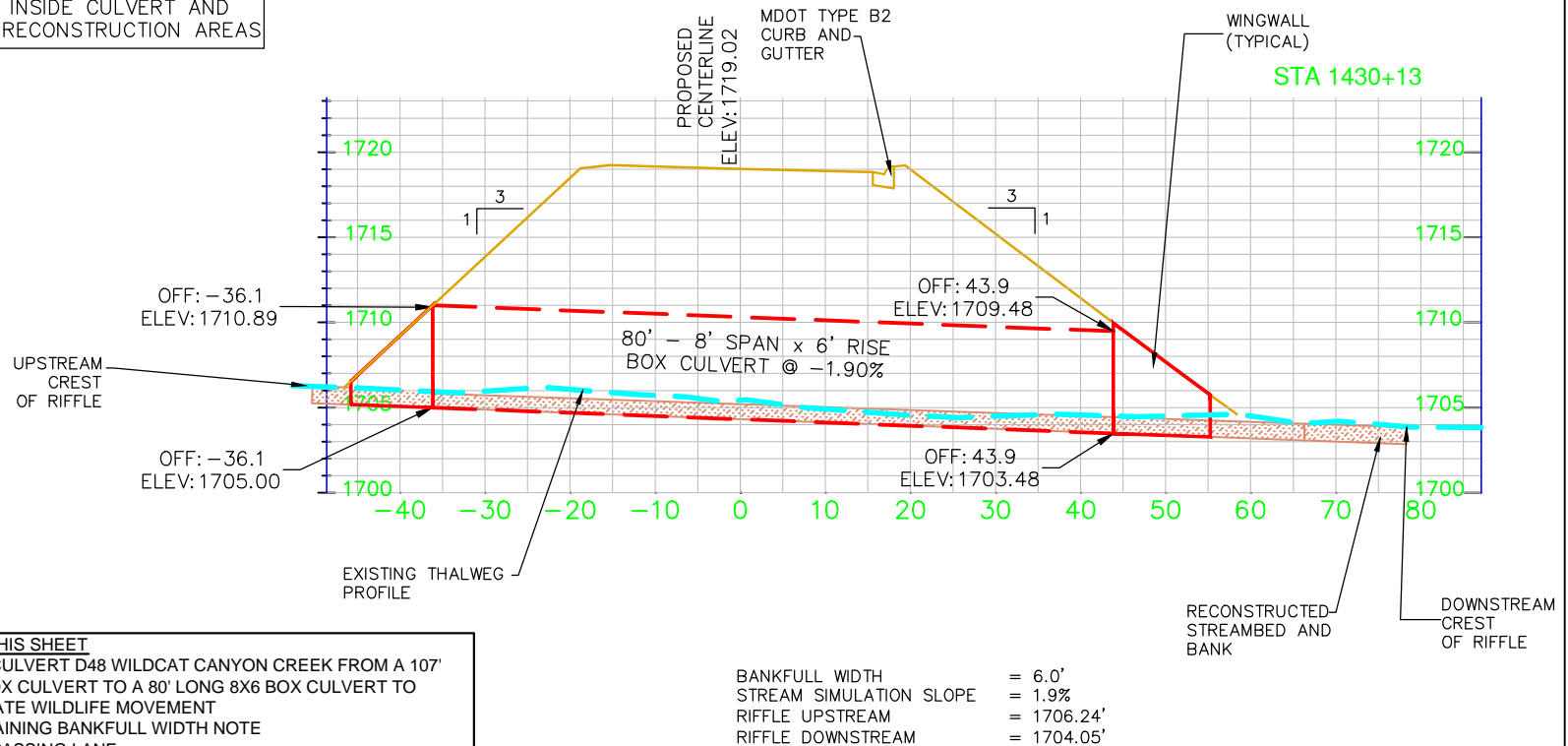
NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



TYPICAL SECTION

8' SPAN x 6' RISE BOX

STREAM BOX CULVERT D48 WILDCAT CANYON CREEK STA 1430+13



REVISIONS THIS SHEET

- CHANGED CULVERT D48 WILDCAT CANYON CREEK FROM A 107' LONG 8X6 BOX CULVERT TO A 80' LONG 8X6 BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE
- REMOVED PASSING LANE



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STA 1430+13 WILDCAT CANYON CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

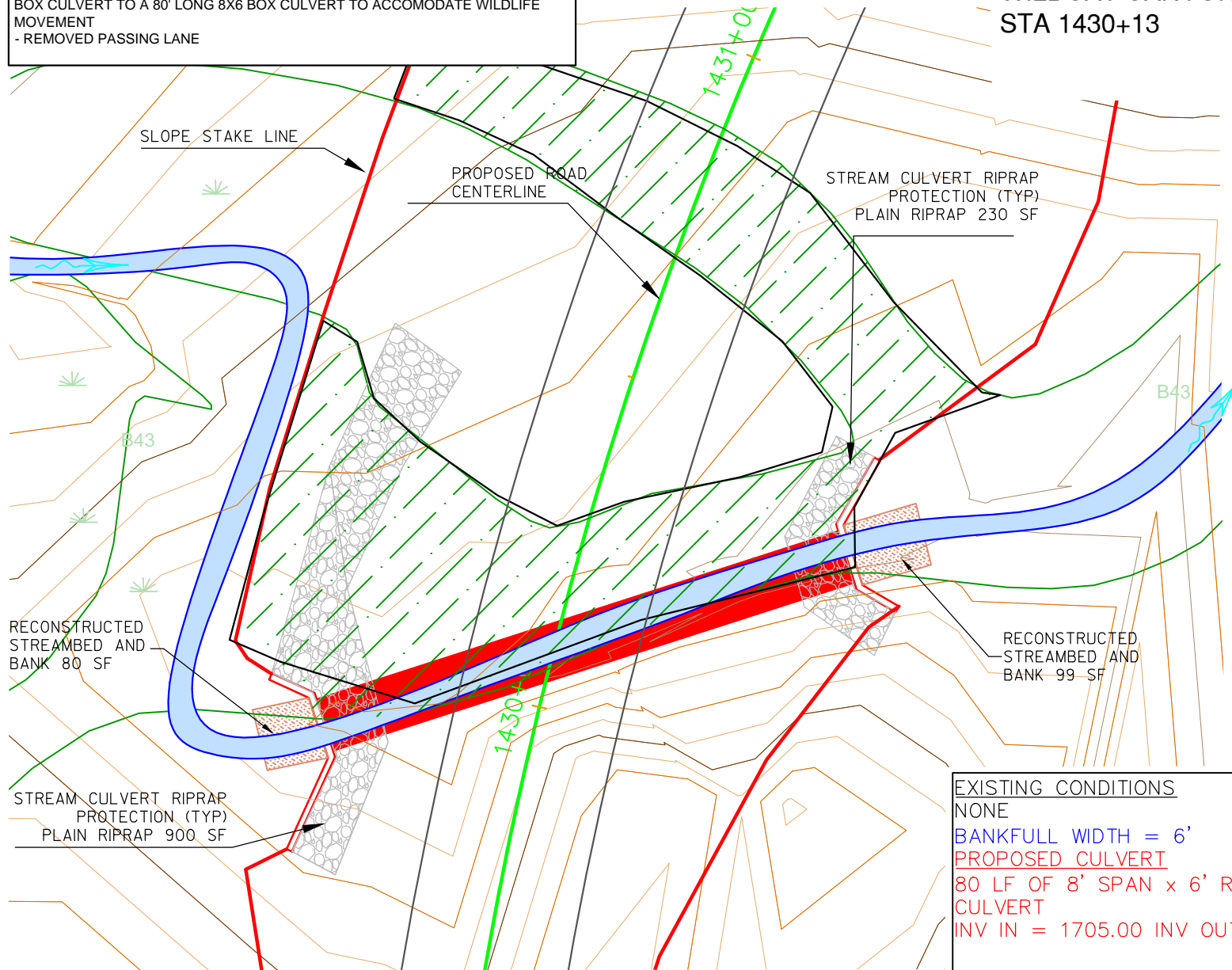
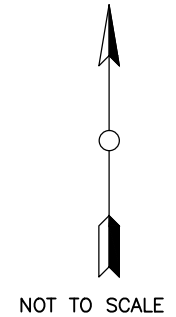
DATE:
9/14/12

11S

REVISIONS THIS SHEET

- CHANGED RECONSTRUCTED STEAMBED LIMITS
- CHANGED CULVERT D48 WILDCAT CANYON CREEK FROM A 107' LONG 8'X6' BOX CULVERT TO A 80' LONG 8X6 BOX CULVERT TO ACCOMODATE WILDLIFE MOVEMENT
- REMOVED PASSING LANE

STREAM BOX CULVERT D48 WILDCAT CANYON CREEK STA 1430+13



EXISTING CONDITIONS

NONE

BANKFULL WIDTH = 6'

PROPOSED CULVERT

80 LF OF 8' SPAN x 6' RISE BOX
CULVERT

INV IN = 1705.00 INV OUT = 1703.48



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635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1430+13 WILDCAT CANYON CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
9/14/12

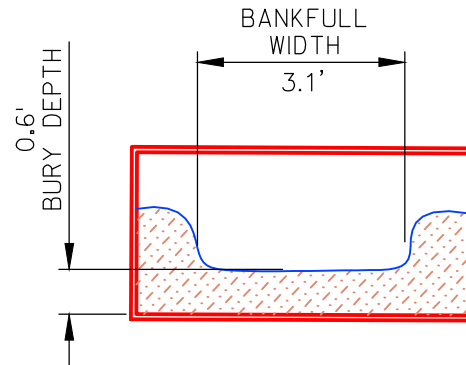
11P

NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



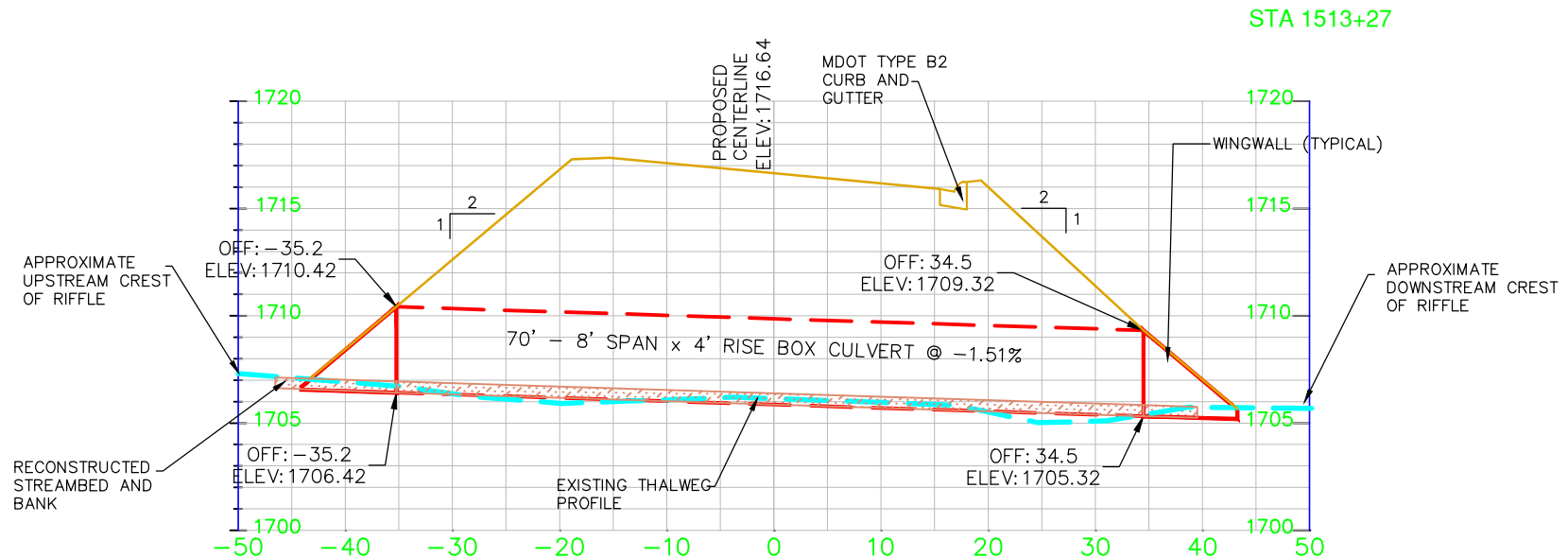
TYPICAL SECTION

8' SPAN x 4' RISE BOX

STREAM BOX CULVERT D59 UNNAMED TRIBUTARY TO MULLIGAN CREEK STA 1513+27

REVISIONS THIS SHEET:

- CHANGED CULVERT D59 UNNAMED TRIBUTARY TO MULLIGAN CREEK FROM A 6'X4' BOX CULVERT TO 8'X4' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE



BANKFULL WIDTH = 3.1'
STREAM SIMULATION SLOPE = 1.51%
RIFFLE UPSTREAM = 1707.28' ESTIMATED
RIFFLE DOWNSTREAM = 1705.74' ESTIMATED



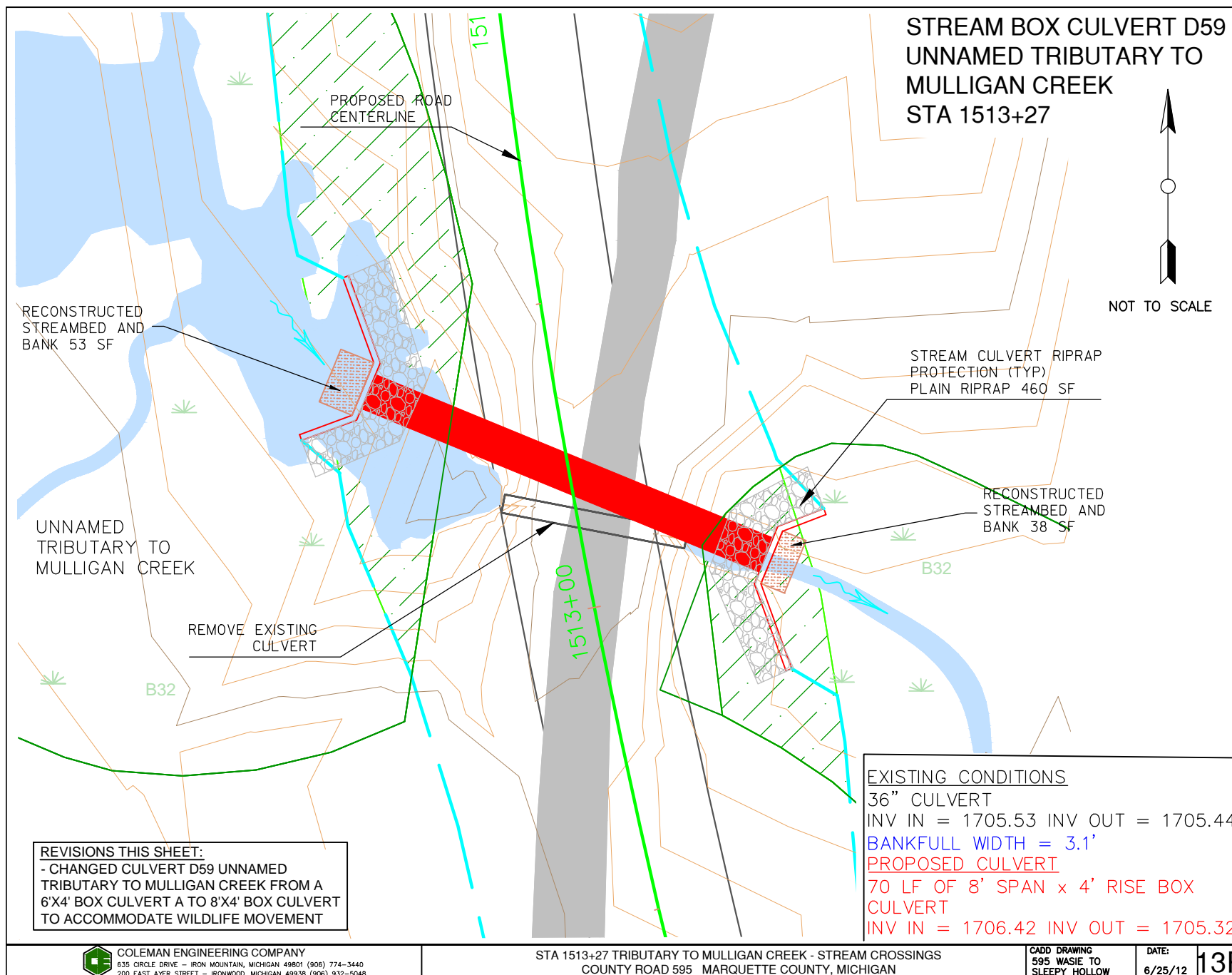
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1513+27 TRIBUTARY TO MULLIGAN CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
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13S

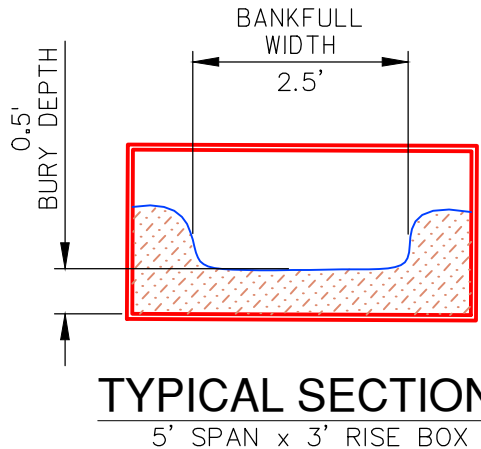


NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

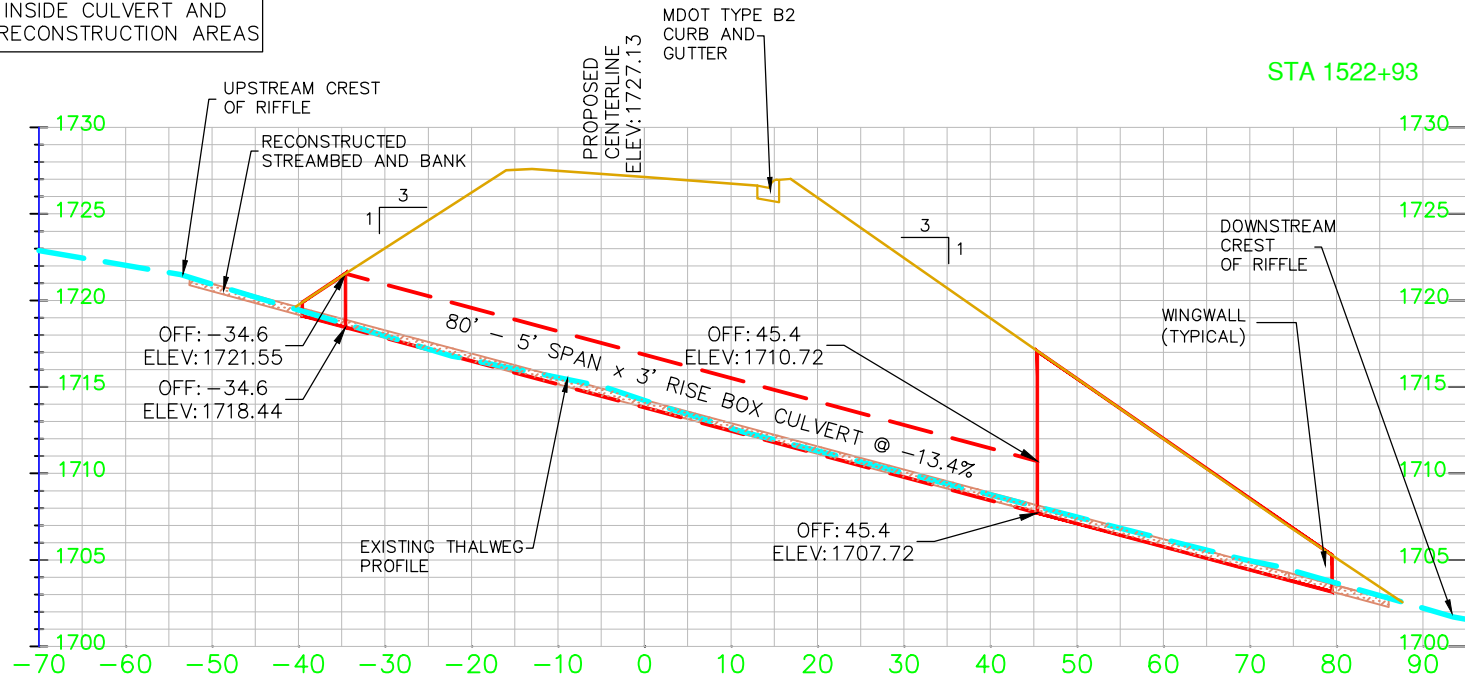
NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



STREAM BOX CULVERT D60
UNNAMED TRIBUTARY TO
MULLIGAN CREEK
STA 1522+93

REVISIONS THIS SHEET

- CHANGED CULVERT D60 UNNAMED TRIBUTARY TO MULLIGAN CREEK FROM 113' LONG 5'X3' BOX CULVERT TO A 80' LONG 5'X3' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE



BANKFULL WIDTH = 2.5'
STREAM SIMULATION SLOPE = 13.4%
RIFFLE UPSTREAM = 1721.44
RIFFLE DOWNSTREAM = 1701.67



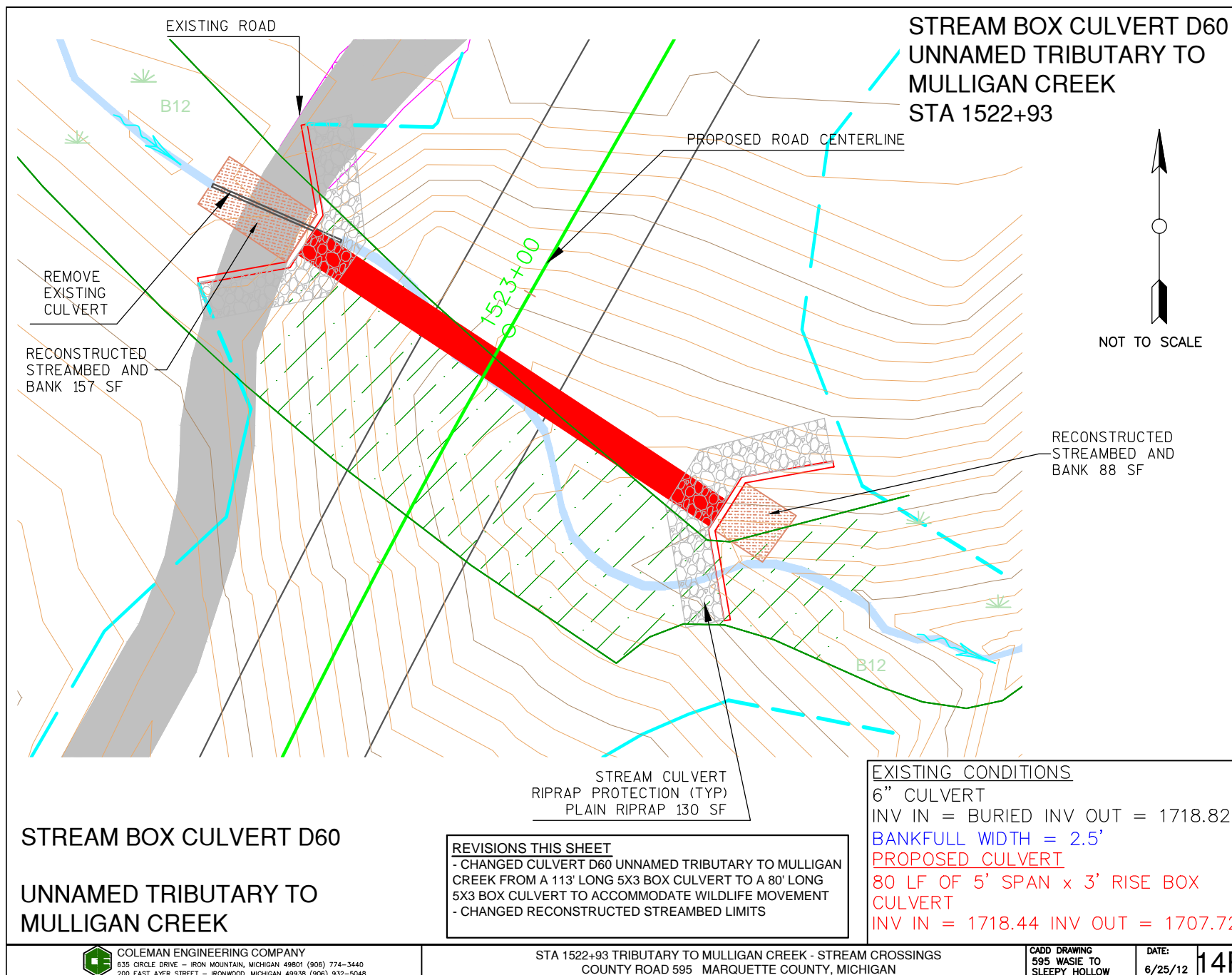
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1522+93 TRIBUTARY TO MULLIGAN CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

14S



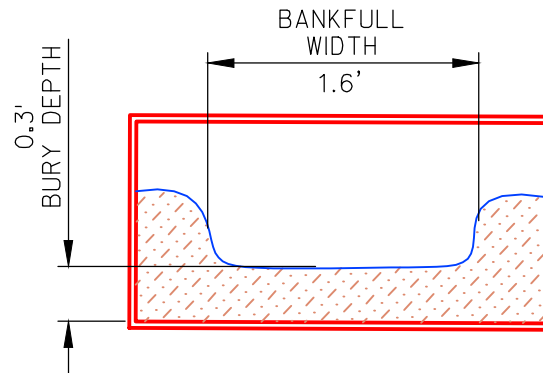
NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS

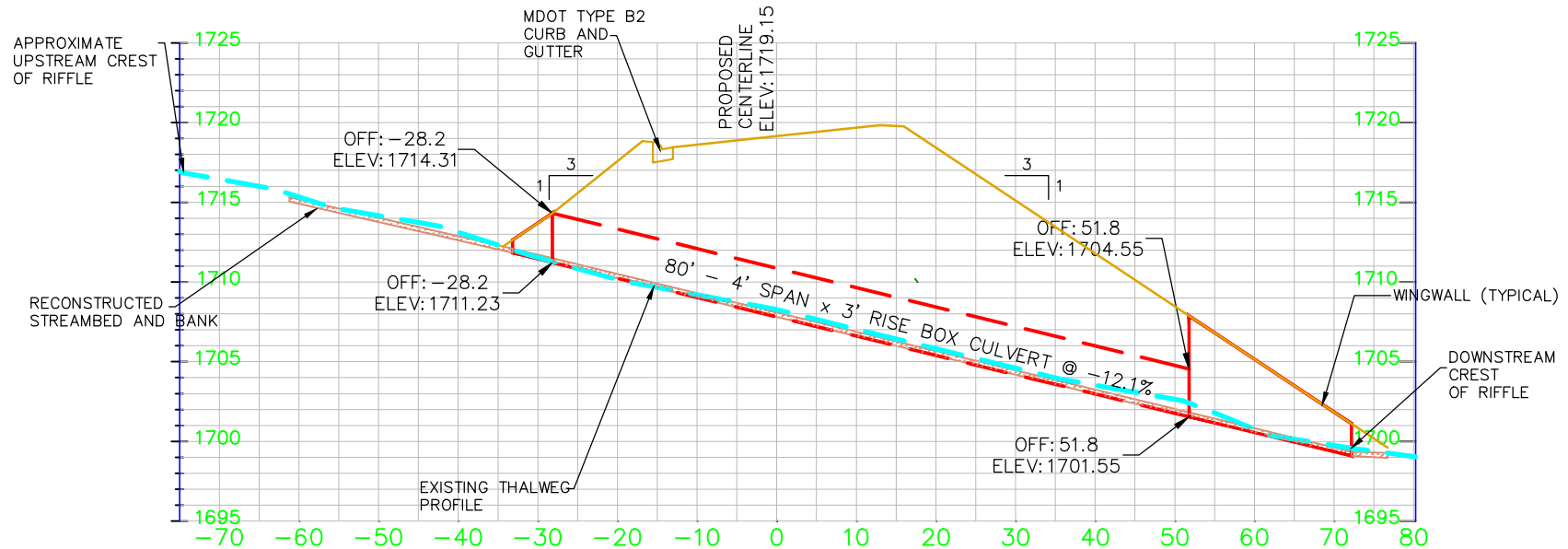
STREAM BOX CULVERT D61
UNNAMED TRIBUTARY TO
MULLIGAN CREEK
STA 1527+21



TYPICAL SECTION

4' SPAN x 3' RISE BOX

STA 1527+21



REVISIONS THIS SHEET

- CHANGED CULVERT D61 UNNAMED TRIBUTARY TO MULLIGAN CREEK FROM A 98' LONG 4'X3' BOX CULVERT TO A 80' LONG 4'X3' BOX CULVERT TO ACCOMMODATE WILDLIFE MOVEMENT
- ADD MAINTAINING BANKFULL WIDTH NOTE

BANKFULL WIDTH	= 1.6'
STREAM SIMULATION SLOPE	= 12.1%
RIFFLE UPSTREAM	= 1716.84' ESTIMATED
RIFFLE DOWNSTREAM	= 1700.37'



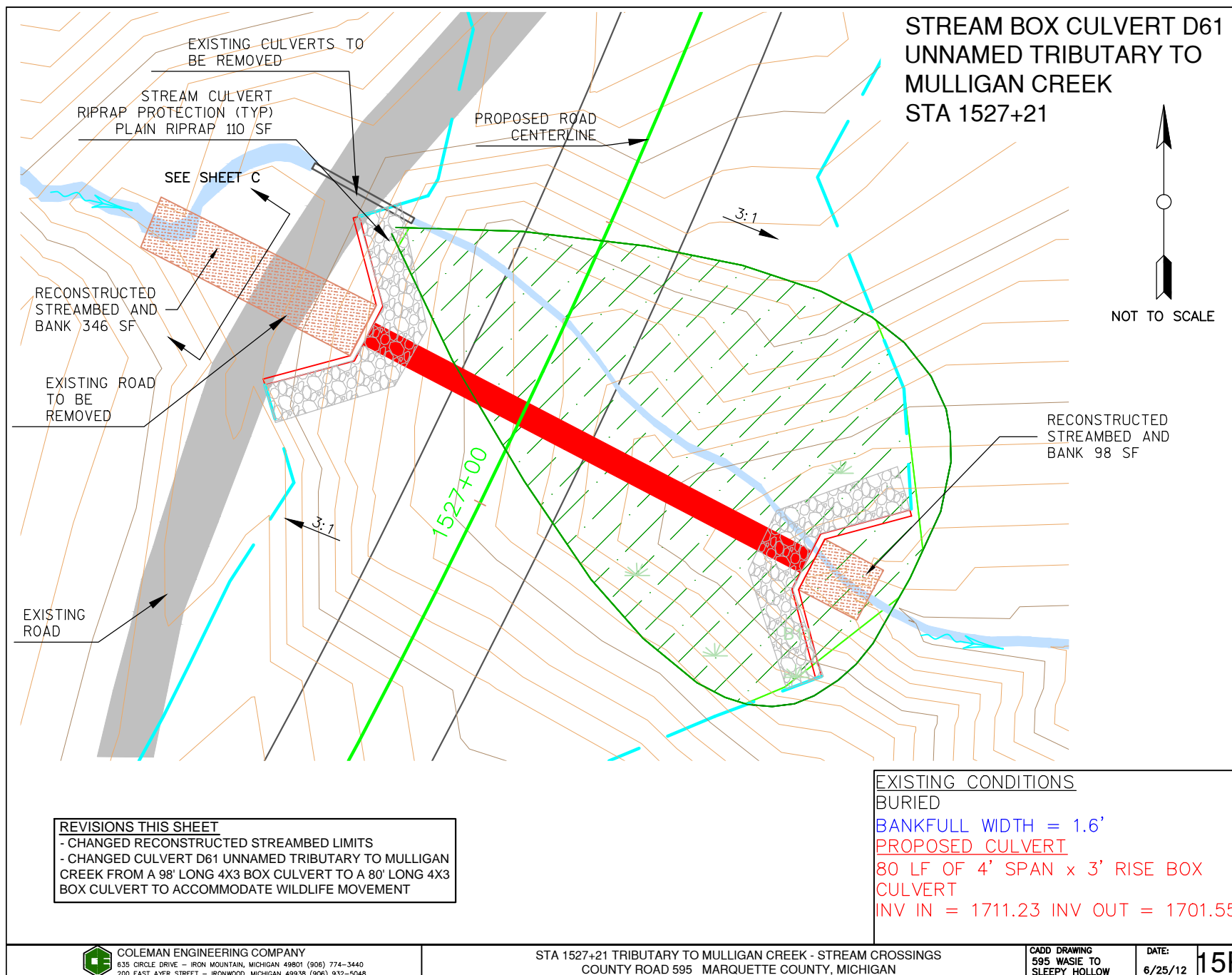
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1527+21 TRIBUTARY TO MULLIGAN CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

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DATE:
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15S

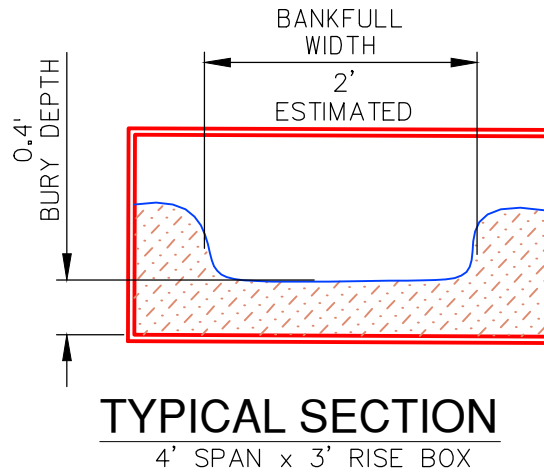


NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

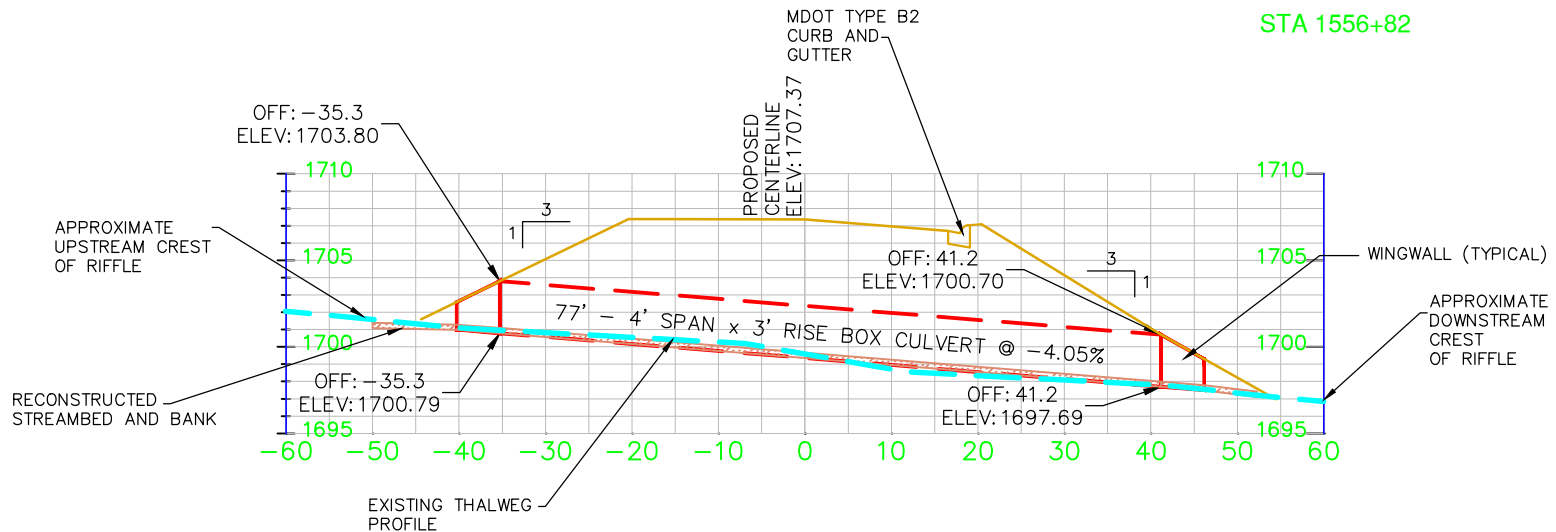
NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



**STREAM BOX CULVERT D64
UNNAMED TRIBUTARY TO
MULLIGAN CREEK
STA 1556+82**

REVISIONS THIS SHEET

- ADD MAINTAINING BANKFULL WIDTH NOTE



BANKFULL WIDTH	= 2' ESTIMATED
STREAM SIMULATION SLOPE	= 4.05%
RIFFLE UPSTREAM	= 1701.38' ESTIMATED
RIFFLE DOWNSTREAM	= 1696.93' ESTIMATED



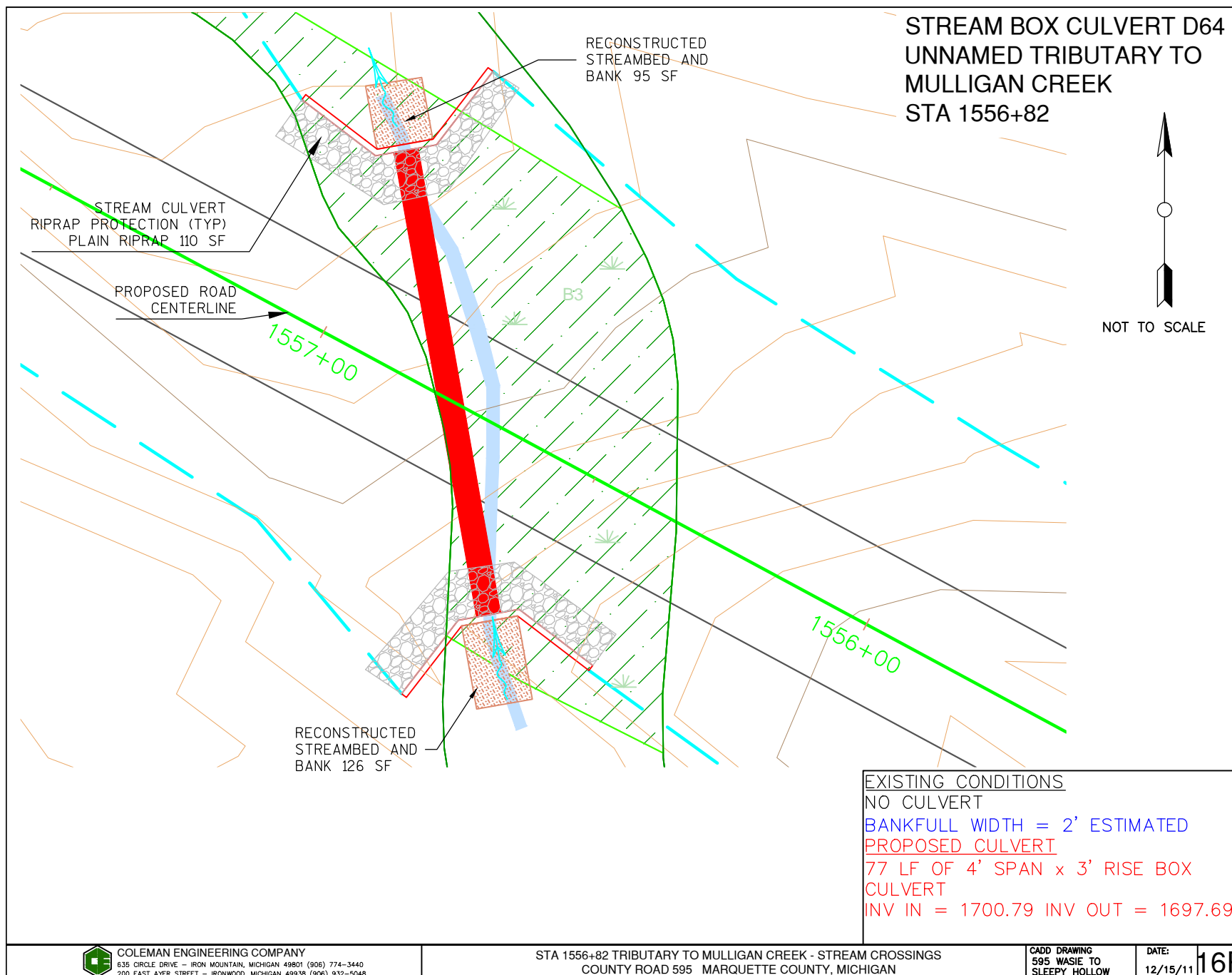
COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1556+82 TRIBUTARY TO MULLIGAN CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

16S



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

STA 1556+82 TRIBUTARY TO MULLIGAN CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
12/15/11

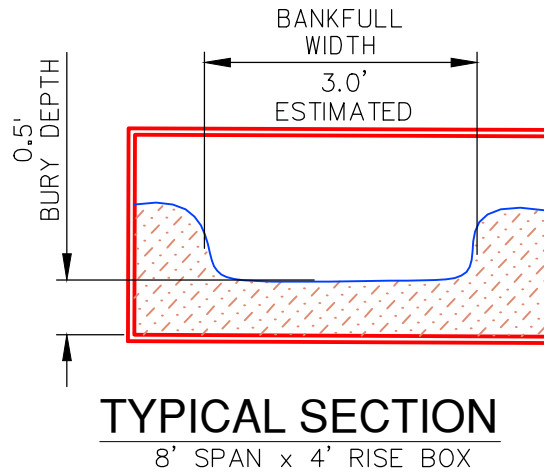
16P

NOTES:

- STREAM CHANNEL AND BANKS MUST BE EXCAVATED FOR INSTALLATION.
- BURY BOTTOM MIN. $\frac{1}{8}$ BANKFULL WIDTH UP TO 2' MAX.

NOTE: MATERIAL FOR THE RECONSTRUCTION OF THE STREAMBED WITHIN THE CULVERT WILL BE PLACED AS THE SECTIONS OF THE CULVERT ARE INSTALLED. THE APPROPRIATE SIZE AND COMPOSITION OF THE MATERIAL TO RECONSTRUCT THE STREAMBED WILL BE DETERMINED DURING THE PREPARATION OF THE FINAL CONSTRUCTION PLANS ACCORDING TO PEBBLE COUNTS TO BE TAKEN FOR EACH STREAM.

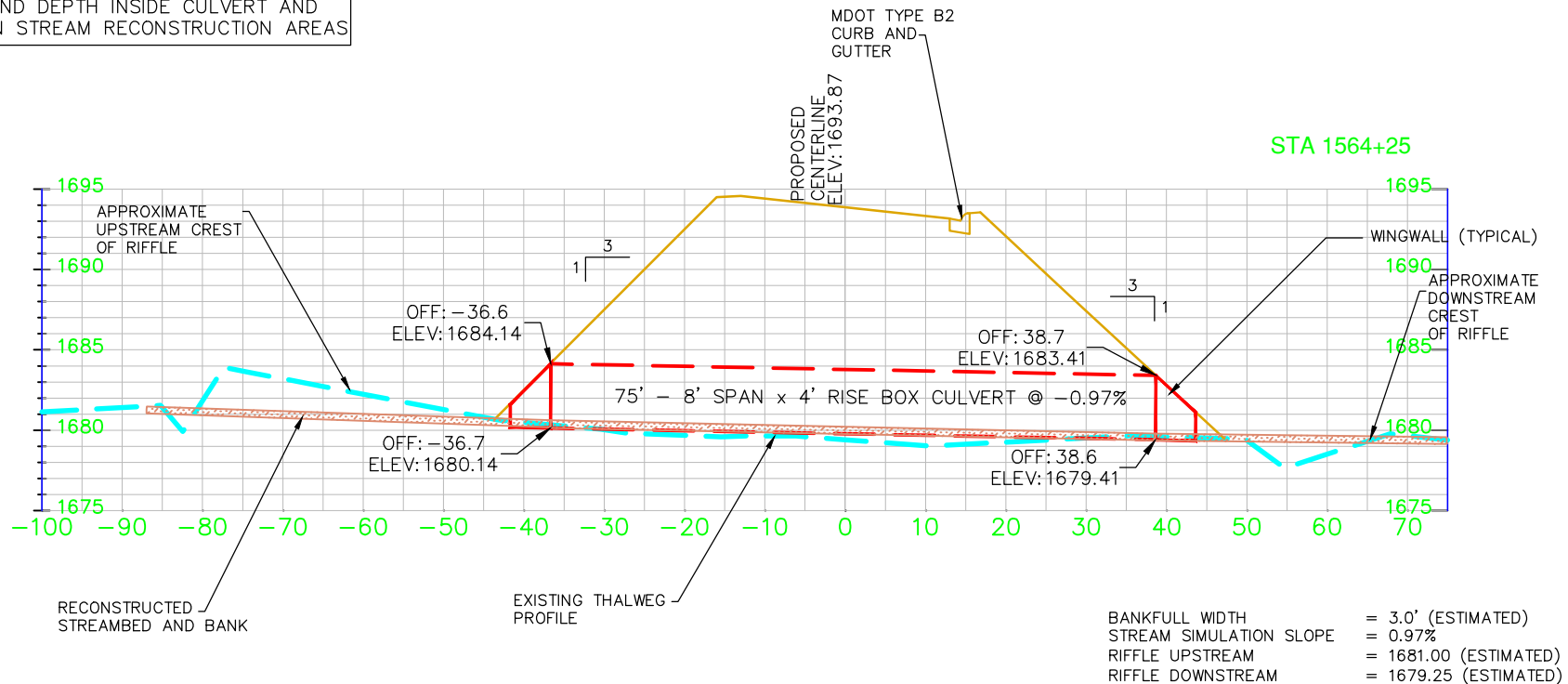
NOTE: MAINTAIN BANKFULL WIDTH AND DEPTH INSIDE CULVERT AND IN STREAM RECONSTRUCTION AREAS



**STREAM BOX CULVERT D65A
MULLIGAN CREEK
STA 1564+25**

REVISIONS THIS SHEET

- ADD CULVERT D65A NEAR MULLIGAN CREEK, A 75' LONG 8'X4' BOX CULVERT. THIS LOCATION WAS IDENTIFIED DURING FIELD SITE VISIT JUNE 11, 2012



COLEMAN ENGINEERING COMPANY
635 CIRCLE DRIVE - IRON MOUNTAIN, MICHIGAN 49801 (906) 774-3440
200 EAST AYER STREET - IRONWOOD, MICHIGAN 49938 (906) 932-5048

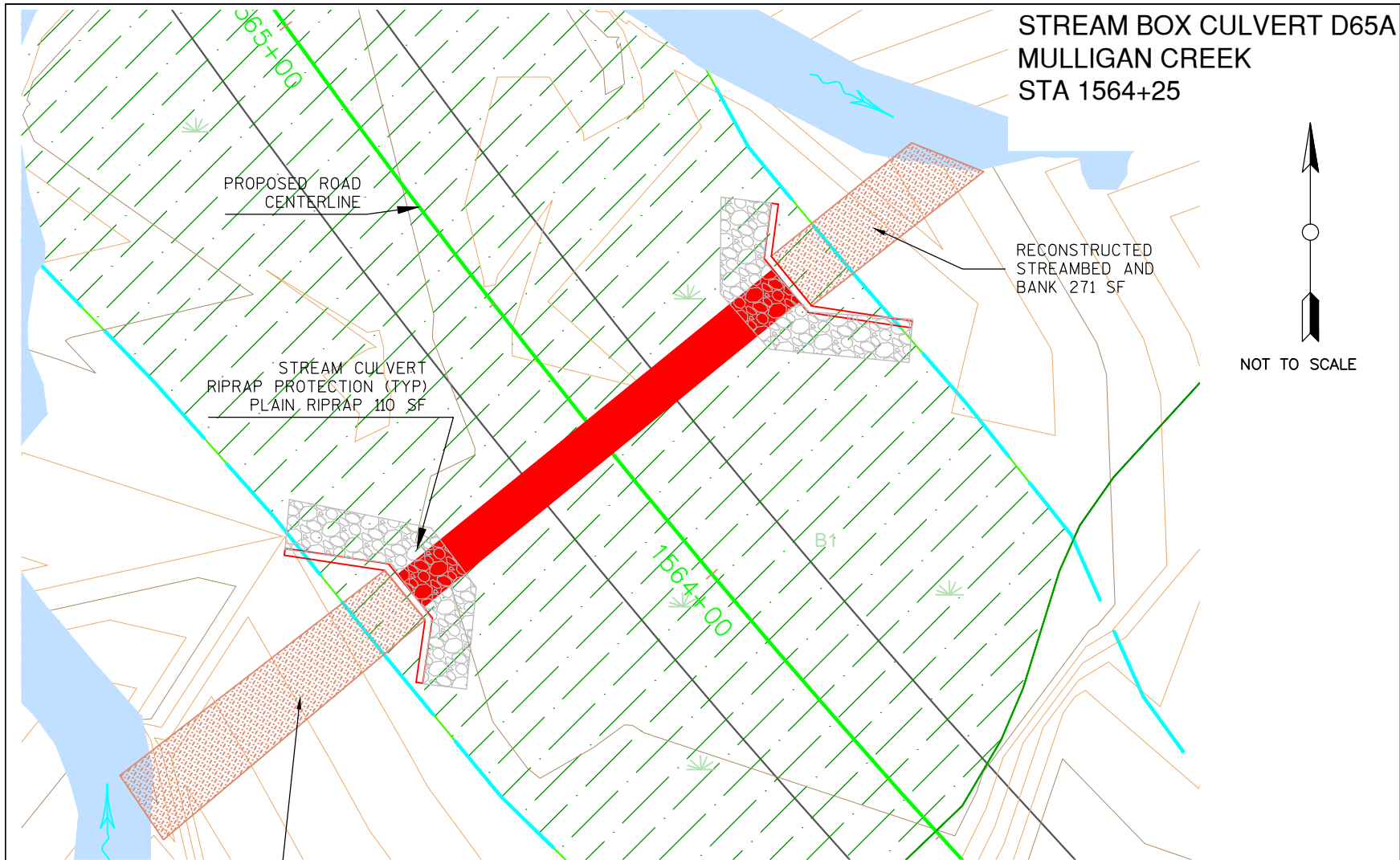
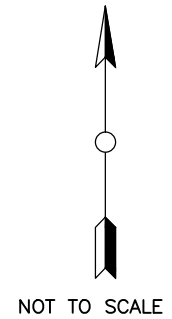
STA 1564+25 MULLIGAN CREEK - STREAM CROSSINGS
COUNTY ROAD 595 MARQUETTE COUNTY, MICHIGAN

CADD DRAWING
595 WASIE TO
SLEEPY HOLLOW

DATE:
6/25/12

17S

STREAM BOX CULVERT D65A
MULLIGAN CREEK
STA 1564+25



REVISIONS THIS SHEET
- ADD CULVERT D65A NEAR MULLIGAN CREEK, A 75' LONG 8'X4' BOX CULVERT. THIS LOCATION WAS IDENTIFIED DURING FIELD SITE VISIT JUNE 11, 2012

EXISTING CONDITIONS
NO CULVERT
BANKFULL WIDTH = 3.0' (ESTIMATED)
PROPOSED CULVERT
75 LF OF 8' SPAN x 4' RISE BOX CULVERT
INV IN = 1680.14 INV OUT = 1679.41



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